

## Checklist for West Virginia UIC Regulations for SDWA Legal Authority—Class VI Only

This table compares the regulatory language in West Virginia’s UIC regulations at 47 CSR 13 (which were updated in 2020) to portions of Parts 124, 144, 146, and 148 under Title 40 of the CFR that are relevant to Class VI wells. In addition to the provision of Subpart H of 40 CFR 146, other aspects of the federal UIC regulations were updated to accommodate the additional well class.

This document is an excerpt of the larger crosswalk table that addresses all well classes. Therefore, some rows contain information and review notes about other injection well classes. Where there were previously multiple notes about the difference between the federal and state rules, Class VI-specific notes about the difference between the federal and state rules are in red.

| [ SEQ CHAPTER \h \r 1]40 CFR Part 124 vs. West Virginia UIC Regulations                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                        |
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| 40 CFR 124 - Procedures For Decisionmaking<br>Subpart A - General Program Requirements |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                        |
| 124.10(c)                                                                              | Public notice must be given by:<br>1) mailing to the applicant;<br>2) mailing to other agencies that have issued or are required to issue a permit to the applicant; and to Federal, State, local, and Tribal agencies with jurisdiction over affected resources.<br>3) For Class I UIC permits only, mailing to state and local oil and gas agencies and state agencies regulating mineral exploration and recovery;<br>4) mailing to a mailing list that includes persons who participated in past permitting activities and others who requested to be included on the list<br>5) mailing to local government where facility will be located and to state | 47-13-13.24.c.<br>Injection Well Permitting Program | 13.24. Public Participation in Permit Process.<br>13.24.c. Methods.<br>13.24.c.1. By mailing a copy of a notice to the following persons (any person otherwise entitled to receive notice under this paragraph may waive the right to receive notice for any classes and categories of permits):<br>13.24.c.1.A. The applicant;<br>13.24.c.1.B. Any other agency including EPA which the Director knows has issued or is required to issue a RCRA, PSD, NPDES permit for the same facility or activity;<br>13.24.c.1.C. Federal and State and interstate agencies with jurisdiction over fish and wildlife resources, public health, the State Historic Preservation Unit of the Department of Culture | 2020 revisions to numbering only. WV does not include a requirement notify O&G agencies, etc. of a Class VI permit application.<br><br>The state regulation does not include notification to oil and gas agencies or state agencies regulating mineral exploration and recovery, as DEP regulates both OG and UIC..<br><br>The state regulation also includes agencies with jurisdiction over fish and |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 124 vs. West Virginia UIC Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                |
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|                                                                         | <p>agencies with jurisdiction over construction or operation.</p> <p>6) For Class VI UIC permits, mail or e-mail to state and local oil and gas agencies and state agencies regulating mineral exploration and recovery, to Director of PWSS program, and to all agencies overseeing UIC wells in the state.</p> <p>7) for major permits, publication of a notice in a daily or weekly newspaper within the area affected by the facility;</p> <p>8) for state-issued permits, in a manner constituting legal notice to the public under State law;</p> <p>9) any other method calculated to give notice to those affected, including press releases.</p> |                                                | <p>and History, and other appropriate government authorities, including any affected states;</p> <p>13.24.c.1.D. Persons on a mailing list developed by:</p> <p>13.24.c.1.D.1. Including those who request in writing to be on the list;</p> <p>13.24.c.1.D.2. Soliciting persons for "area lists" from participants in past permit proceedings in that area; and</p> <p>13.24.c.1.D.3. Notifying the public of the opportunity to be put on the mailing list through periodic publication in the public press and in appropriate publications of the State.</p> <p>13.24.c.1.E. By mailing a copy to each agency having authority under State law with respect to the construction or operation of such facility;</p> <p>13.24.c.2. For any permit, the Director shall send the public notice to the applicant who shall be responsible for publication of a Class 1 legal advertisement by a date, and in a paper specified by the Director. Upon publication, the applicant shall send the Director a copy of the certificate of publication. The costs of publication shall be borne by the applicant; and</p> <p>13.24.c.3. Any other method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum or medium to elicit public participation.</p> | <p>wildlife resources, public health, preservation units, and other appropriate government authorities, including any affected states.</p> <p>The state regulation does not include newspaper notice for major permits (it is not clear what would constitute a major permit).</p> <p>The requirements at CSR 47-13-14.24.c apply to all UIC wells, including Class II and Class VI wells.</p> |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                           |
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| 40 CFR 144 - Underground Injection Control Program                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                           |
| Subpart A - General Provisions                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 144.6(f)                                                                | Class VI wells are not experimental in nature and are used for geologic sequestration of carbon dioxide (CO2) beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of CO2 that have been granted a waiver of the injection depth requirements pursuant to requirements at § 146.95 of this chapter; or, wells used for geologic sequestration of CO2 that have received an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery (EOR/EGR) aquifer exemption. | Title 47 Series 13 Chapter 4.6 [Classes of Wells - UIC] | 4.6. Class 6. Wells used to inject carbon dioxide (CO2) into deep rock formations. Wells that are not experimental in nature that are used for geologic sequestration of carbon dioxide beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to requirements at subsection 14.8.d. of this chapter; or, wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class 2 enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to section 13.3 and 40 CFR 144.7(d).<br><br>13.1.b. Existing well means a Class 6 well which was authorized prior to August 25, 1988 or a well which has become a Class 6 well as a result of a change in the definition of the injected waste into a waste hazardous waste. No cause for stringency. (Move this elsewhere in crosswalk) | This definition was added in 2020. It is similar to the CFR except that it specifies that the injection for GS would be into deep rock formations. This may affect the applicability of the requirements to CO2 injection in shallow formations such as coal beds. Is this WV’s intent?<br><br>The state also defines an “existing” Class VI well at 13.1.b. this probably has no impacts for stringency. |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                    |
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| 144.7(a)                                                                | <p><b>§ 144.7 Identification of underground sources of drinking water and exempted aquifers.</b></p> <p>The Director may identify and shall protect all aquifers, which meet the USDW definition, except those identified in (b) or an expansion to the areal extent of an existing Class II EOR/EGR aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration under paragraph (d). Other than EPA approved aquifer exemption expansions that meet the criteria set forth in § 146.4(d), new aquifer exemptions shall not be issued for Class VI injection wells.</p> | Title 47 Series 13<br>Chapter 13.22.a<br>[Injection Well Permitting Program - UIC] | The Director may identify (by narrative description, illustrations, maps, or other means) and shall protect, except where exempted under subdivision 13.22.b of this section, as an underground source of drinking water, all aquifers or parts of aquifer which meet the definition of an "underground source of drinking water" in section 2. Even if an aquifer has not been specifically identified by the Director, it is an underground source of drinking water if it meets the definition in section 2. | 2020 revisions to numbering only; does not address revisions specific to aquifer exemption expansions for Class VI wells. Revisions to be consistent with the CFR are recommended. |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                |
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| 144.7(b)                                                                | The Director may identify aquifers or parts of aquifers which he proposes to designate as exempted using the criteria in § 146.4, subject to Administrator approval. No designation of an expansion to the areal extent of a Class II EOR/EGR aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration shall be final until approved by the Administrator as a revision to the applicable Federal UIC program under part 147 or as a substantial revision of an approved State UIC program in accordance with §145.32. Subsequent to program approval, the Director may, after notice and opportunity for a public hearing, identify additional exempted aquifers. For approved State programs exemption of aquifers identified (i) under §146.04(b) shall be treated as a program revision under §145.32; (ii) under §146.04(c) shall become final if the Administrator has not disapproved the designation within 45 days. | Title 47 Series 13 Chapter 13.22.b and 13.22.c [Injection Well Permitting Program - UIC] | <p>b. The Director may identify (by narrative description, illustrations, maps, or other means) and describe in geographic and/or geometric terms, such as vertical and lateral limits and gradient, which are clear and definite, all aquifers or parts thereof which the Director proposes to designate as exempted aquifers using the criteria in section 3.</p> <p>c. No designation of an exempted aquifer submitted as a part of a UIC Program shall be final until approved by the Director of the U.S. EPA as part of the State program.</p> | <p>2020 revisions to numbering only; they do not address Class VI-specific provisions at 144.7(b)(2), i.e., that no designation of an expansion to the areal extent of a Class II EOR/EGR aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration shall be final until approved by the Administrator.</p> <p>Revisions to be consistent with the CFR are recommended.</p> |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                |         |                                                                                                                                                                                                                                                                                                                            |
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| 144.7(d)                                                                | <p>In order to make a request to the Director to approve an expansion to the areal extent of existing Class II aquifer exemptions for Class VI wells, the owner or operator of a Class II EOR/EGR must define and describe all aquifers that are requested to be designated as exempted using the criteria in § 146.4. Requests must be treated as a revision to the applicable Federal UIC program under part 147 or as a substantial program revision to an approved State UIC program under § 145.32 and will not be final until approved by EPA. The Director must determine that the request meets the criteria in § 146.4 and consider:</p> <ol style="list-style-type: none"> <li>1) Current and potential future use of the USDWs to be exempted as drinking water resources;</li> <li>2) The predicted extent of the injected CO<sub>2</sub> plume and any mobilized fluids that may degrade of water quality, over the GS project lifetime, as informed by computational modeling at § 146.84(c)(1);</li> <li>3) Whether the areal extent of the expanded aquifer exemption is of sufficient size to account for any possible revisions to the computational model during reevaluation of the area of review, pursuant to § 146.84(e); and</li> <li>4) Any information submitted to support a waiver request made by the owner or operator under § 146.95, if appropriate.</li> </ol> |                                                |         | <p>Not included.</p> <p>This provision is not included in the 2020 rule. However the state does reference expansions to the area extent of existing Class II aquifer exemptions pursuant to §§40 CFR 146.4 and 144.7(d) in the definition of a Class VI well. Revisions to be consistent with the CFR are recommended.</p> |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                                                                        |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |
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| Subpart B—General Program Requirements                                  |                                                                                                                                                                                                                        |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                     |
| 144.12(b)                                                               | For Class I, II, III, and VI wells, if any water quality monitoring indicates contamination of a USDW, the Director shall prescribe additional requirements for the well to prevent such movement.                     | Title 47 Series 13<br>Section 14.1.c<br>[Injection Well Permitting Program - UIC] | For Class 1, 2, 3 and 6 wells, if any water quality monitoring of an USDW indicates the movement of any contaminant into USDW except as authorized under this rule, the Director shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to prevent such movement. In the case of wells authorized by permit, these additional requirements shall be imposed by modifying the permit or the permit may be revoked if cause exists, or appropriate enforcement action may be taken if the permit has been violated. In the case of wells authorized by rule, see subsection 14.2. | Same. Reference to Class VI wells was added to 2020 rule.<br><br>The state UIC regulation has requirements at CSR 47-13-13.1.c which apply to all UIC wells, including Class II and Class VI wells. |
| 144.15                                                                  | <b>§ 144.15 Prohibition of non-experimental Class V wells for geologic sequestration.</b><br><br>The construction, operation or maintenance of any non-experimental Class V geologic sequestration well is prohibited. |                                                                                   | NONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | There is no explicit prohibition of non-experimental Class V GS wells in the 2020 rule.                                                                                                             |
| 144.18                                                                  | <b>§ 144.18 Requirements for Class VI wells.</b><br><br>Owners or operators of Class VI wells must obtain a permit. Class VI wells cannot be authorized by rule to inject carbon dioxide.                              |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | This Class VI specific provision has not been added.                                                                                                                                                |

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| 144.19                                                                  | <p><b>§ 144.19 Transitioning from Class II to Class VI.</b></p> <p>Owners or operators that are injecting carbon dioxide for the primary purpose of long-term storage into an oil and gas reservoir must apply for and obtain a Class VI geologic sequestration permit when there is an increased risk to USDWs compared to Class II operations. In determining if there is an increased risk to USDWs, the owner or operator as well as the Director must consider:</p> <ol style="list-style-type: none"> <li>1) Increase in reservoir pressure within the injection zone(s);</li> <li>2) Increase in carbon dioxide injection rates;</li> <li>3) Decrease in reservoir production rates;</li> <li>4) Distance between the injection zone(s) and USDWs;</li> <li>5) Suitability of the Class II area of review delineation;</li> <li>6) Quality of abandoned well plugs within the area of review;</li> <li>7) The owner's or operator's plan for recovery of carbon dioxide at the cessation of injection;</li> <li>8) The source and properties of injected carbon dioxide; and</li> <li>9) Any additional site-specific factors as determined by the Director.</li> </ol> |                                                | NONE.   | There is no provision for transitioning from Class II to Class VI in the 2020 rule. |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                      |
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| Subpart C—Authorization of Underground Injection by Rule                |                                                                                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                      |
| 144.22(b)                                                               | Rule authorization under this section expires upon the effective date of a permit, after plugging and abandonment, or after conversion. | Title 47 Series 13<br>Section 14.3.a<br>[Injection Well Permitting Program - UIC] | 14.3.a. Permit application. Except as provided in subsection 14.2 (authorization by rule), all underground injections into Class 1, 2, or 3, or 6 wells shall be prohibited unless authorized by permit. Those authorized by a rule under subsection 14.2 must still apply for a permit under this section unless authorization was for the life of the well or project. Rules authorizing well injections for which permit applications have been submitted shall lapse for a particular well injection or project upon the effective date of the permit or permit denial for that well injection or project. Expiration will be effective following effective date of a permit, after closure (plugging and abandonment), or after conversion of the well. | Authorization by rule expires upon issuance of a permit or permit denial; there is no specific provision for expiration as a result of well closure or conversion.<br><br>The 2020 update adds a provision for expiration as a result of well closure or conversion and incorporates Class VI wells. |

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| Subpart D—Authorization by Permit                                       |         |                                                |         |            |

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*March 2021*

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| 144.31(e) | <p>All applicants for Class I, II, III, and V permits shall provide the following information to the Director. Applicants for Class VI permits shall follow the criteria provided in § 146.82 of this chapter.</p> <ol style="list-style-type: none"> <li>1) the activities to be conducted which require it to obtain permits;</li> <li>2) name and location of facility;</li> <li>3) up to four SIC codes;</li> <li>4) operator's information</li> <li>5) whether the facility is located on Indian lands;</li> <li>6) a listing of all permits or construction approvals applied for or received from the list in 40 CFR 144.31(e)(6);</li> <li>7) a topographic map extending one mile beyond the property boundaries of the source depicting the items listed in 144.31(e)(7);</li> <li>8) for EPA programs, a brief description of the business;</li> <li>9) a list of all landowners within one quarter mile of the facility (DI only); and</li> <li>10) a plugging and abandonment plan.</li> </ol> | <p>Title 47 Series 13<br/>Chapter 13.10.d<br/>[Injection Well<br/>Permitting Program<br/>- UIC]</p> | <p>13.10.d. Information requirements. All applicants for UIC permits shall provide the following information to the Director, using the application form provided by the Director:</p> <ol style="list-style-type: none"> <li>d.1. The activities conducted by the applicant which require it to obtain permits under UIC.</li> <li>d.2. Name, mailing address, and location of the facility for which the application is submitted.</li> <li>d.3. Up to four (4) SIC codes ....</li> <li>d.4. The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.</li> <li>d.5. A listing of all permits or construction approvals received or applied for under any of the following programs:....</li> <li>d.6. A topographic map extending one (1) mile beyond the property boundaries of the source, depicting the facility and each well where fluids from the facility are injected underground and those wells, springs, other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant in the map area.</li> <li>10.d.6.A. Map requirements for Class 6 permits shall include the injection well for which a permit is sought and the applicable area of review consistent with 5.4 and 14.9.b.5. Within the area of review, the map must show the number or name, and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep</li> </ol> | <p>Same information is required, except for the following:</p> <ul style="list-style-type: none"> <li>-The requirement to submit a plugging and abandonment plan is included in subsection 13.7.f.</li> <li>-The map requires drinking water wells "within the map area," not "¼ mile from facility property boundary."</li> <li>Intake and discharge structures and hazardous waste treatment, storage, or disposal facilities are not required on the map.</li> <li>-Whether well is located on Indian lands.</li> </ul> <p>The 2020 rule does not explicitly state that Class VI applicants follow the requirements of 13.8. (required Class 6 Permit Information). Revisions to be consistent with the CFR are recommended.</p> <p>It also adds specific requirements for the Class VI map that are very similar to those at 13.8.a.2.</p> <p>The UIC application available on-line is for new, modifications or reissuance of permits. It doesn't require the list of activities conducted (but does ask for the type of</p> |
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\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt "optional" program elements such as authorization by rule.

| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |         |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                              |
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|                                                                         |         |                                                | stratigraphic boreholes, State- or EPA-approved subsurface cleanup sites, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features including structures intended for human occupancy, State, Tribal, and Territory boundaries, and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map.<br>d.7. A brief description of the nature of the business. | business and current method of disposal of fluids) or the SIC codes. [ HYPERLINK "http://www.dep.wv.gov/WWE/PERMIT/UIC/Pages/default.aspx" ] |

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*West Virginia: Checklist for State UIC Regulations*  
*March 2021*

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                      |
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| 144.33(a)                                                               | <p><b>§ 144.33 Area permits.</b></p> <p>The Director may issue a permit on an area basis provided that the permit is for injection wells:</p> <ol style="list-style-type: none"> <li>1) described and identified by location if they are existing wells, except that the Director may accept a single description for substantially similar wells;</li> <li>2) within the same well field, facility site, reservoir, project, or similar unit in the same State;</li> <li>3) operated by a single owner or operator; and used to inject fluids other than hazardous waste;</li> <li>4) Used to inject other than hazardous waste; and</li> <li>5) Other than Class VI wells.</li> </ol> | Title 47 Series 13<br>Section 13.4.a<br>[Injection Well Permitting Program - UIC] | <p>The Director may issue a permit on an area basis, rather than for each well individually, provided that the permit is for injection wells:</p> <ol style="list-style-type: none"> <li>1. Described and identified by location in permit application(s) if they are existing wells, except that the Director may accept a single description of wells with substantially the same characteristics;</li> <li>2. Within the same well field, facility site, reservoir project, or similar unit in the State;</li> <li>3. Operated by a single owner or operator; and</li> <li>4. Used to inject other than hazardous waste.</li> </ol> | The 2020 update does not include a provision analogous to 144.33 (a)(5). The rule does not appear to explicitly ban area permits for Class VI wells. |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                  |                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| 144.36(a)                                                               | <p><b>§ 144.36 Duration of permits.</b></p> <p>Permits for Class I and V wells shall be effective for a fixed term not to exceed 10 years. Permits for Class II and III wells shall be issued for up to the operating life of the facility. UIC permits for Class VI wells shall be issued for the operating life of the facility and the post-injection site care period. The Director shall review each issued Class II, III, and VI well UIC permit at least once every 5 years to determine whether it should be modified, revoked and reissued, terminated or a minor modification made.</p> | Title 47 Series 13<br>Chapter 14.13<br>[Injection Well Permitting Program - UIC] | Duration of Permits. UIC permits for Class 1, 2, 3 and 6 wells shall be effective for a fixed term not to exceed five (5) years. | <p>The state's UIC rule provides that permits for all well classes are approved for a period of 5 years.</p> <p>Since permits are issued for 5 years, there is no re-evaluation requirement for Class 2 or 3 wells.</p> <p>In the 2020 update, Class 6 permits are effective for up to 5 years (instead of the life of the facility). Although it does require AoR reevaluations every 5 years at 14.9.b.5.B.i (similar to the CFR). Revisions to be consistent with the CFR are recommended.</p> <p>However, the state UIC regulation has requirements similar to the federal rule at CSR 47-13-13.13., and these citations apply to all UIC wells including Class II wells.</p> |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                          |
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| 144.38(b)                                                               | <p>Any UIC permit for a well not injecting hazardous waste or injecting carbon dioxide for geologic sequestration may be automatically transferred to a new permittee if:</p> <ol style="list-style-type: none"> <li>1) the current permittee notifies the Director at least 30 days in advance of the transfer date;</li> <li>2) the notice includes a written agreement between the existing and new permittees containing a transfer date, coverage and liability, and that the financial responsibility requirements will be met; and</li> <li>3) the Director does not notify the permittee of his intent to modify or revoke and reissue the permit.</li> </ol> | Title 47 Series 13<br>Chapter 13.17.b<br>[Injection Well Permitting Program - UIC] | <p>Automatic transfers. As an alternative to transfers under subdivision 13.17.a of this section, any UIC permit for a well not injecting hazardous waste may be automatically transferred to a new permittee if:</p> <ol style="list-style-type: none"> <li>1. The current permittee notifies the Director at least thirty (30) days in advance of the proposed transfer date in paragraph 13.17.b.2 of this section;</li> <li>2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility coverage, and liability between them and, in the case of UIC permits, the notice demonstrates that the financial responsibility requirements of subdivision 13.7.g will be met by new permittee; and</li> <li>3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this section may also be a minor modification under subsection 13.20. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 13.17.b.2 of this section.</li> </ol> | <p>This provision was not revised in 2020 to exclude automatic transfers for Class 6 wells. Revisions to be consistent with the CFR are recommended.</p> |

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**[ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations**

| Code of Federal Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Current WEST VIRGINIA Statutes and Regulations                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Difference                                                                                                                                                                                                                                          |
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| 144.39(a)                   | <p>For Class I Hazardous, Class II, Class III, or Class VI wells, and all other wells when the permittee requests or agrees, the following may be causes for revocation and reissuance or modification:</p> <ol style="list-style-type: none"> <li>1) there are material and substantial alterations or additions to the permitted facility or activity;</li> <li>2) the director has received new information;</li> <li>3) the standards or regulations on which the permit was based have been changed;</li> <li>4) the Director determines good cause exists for modification of a compliance schedule; or</li> <li>5) for Class VI wells, whenever the Director determines that permit changes are necessary based on area of review reevaluations or any amendments to the testing and monitoring plan, injection well plugging plan, post injection site care and site closure plan, or emergency and remedial response plan; or a review of monitoring and/or testing results conducted in accordance with permit requirements.</li> </ol> | Title 47 Series 13 Chapter 13.18.a [Injection Well Permitting Program - UIC] | <p>Cause for modification. The following are causes for modification but not revocation and reissuance of permits, except for Class 2 and 3 wells in which case the following may be causes for revocation and reissuance as well as modification. The following may be causes for revocation and reissuance as well as modification when the permittee requests or agrees.</p> <ol style="list-style-type: none"> <li>1. Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.</li> <li>2. Information. The Director has received information. Permits other than for Class 2 and 3 wells may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised rules, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. For UIC area permits, this cause shall include any information indicating that cumulative effects on the environment are unacceptable.</li> </ol> | <p>The state rule does not appear to allow for reissuance and revocation of class I permits unless the permittee agrees.</p> <p>Recommendation: Revise to match the federal requirements, or identify law or regulation with similar authority.</p> |

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**[ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations**

| Code of Federal Regulations |         | Current WEST VIRGINIA Statutes and Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Difference                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| Cont'd<br>144.39(a)         |         |                                                | <p>3. New rules. The standards or rules on which the permit was based have been changed by promulgation of amended standards or rules or by judicial decision after the permit was issued. Permits other than for Class 2 or 3 wells may be modified during their terms for this cause only as follows:</p> <p>A. For promulgation of amended standards or rules, when:</p> <p>A.1. The permit condition to be modified was based on a State regulation requiring compliance with forty (40) CFR Part 146; and</p> <p>A.2. The State has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based.</p> <p>B. For judicial decisions, a court of competent jurisdiction has remanded and stayed State promulgated rules if the remand and stay concern that portion of the rules on which the permit condition was based.</p> <p>4. Compliance schedules. The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy.</p> | <p>The state rule limits modification of Class 1 wells for new standards or rule. (Class 1 wells not included in the exception for Class 2 and 3 permits.)</p> <p>Recommendation: Revise to match the federal requirements, or identify law or regulation with similar authority.</p> <p>This provision was not revised in 2020 to either address changes associated with Class VI AoR reevaluations (per 144.39(a)(3),(5)) or to implement the recommendation.</p> |

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[ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations

| Code of Federal Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Current WEST VIRGINIA Statutes and Regulations                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Difference                                                                                                  |
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| 144.41*                     | <p><b>§ 144.41 Minor modifications of permits.</b></p> <p>Upon consent of the permittee, the Director may make minor modifications to a permit, which may only:</p> <ol style="list-style-type: none"> <li>1) correct typographical errors;</li> <li>2) require more frequent monitoring or reporting;</li> <li>3) change an interim compliance date in a schedule of compliance;</li> <li>4) allow for a change in ownership or operational control of a facility;</li> <li>5) change quantities or types of fluid injected;</li> <li>6) change construction requirements approved by the Director;</li> <li>7) amend a plugging and abandonment plan; or</li> <li>8) amend a Class VI injection well testing and monitoring plan, plugging plan, post-injection site care and site closure plan, or emergency and remedial response plan where the modifications merely clarify or correct the plan.</li> </ol> | Title 47 Series 13<br>Chapter 13.20<br>[Injection Well Permitting Program - UIC] | <p>Minor Modifications of Permits. Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section. Any permit modification not processed as a minor modification under this section must be made for cause and with a draft permit and public notice as required in subsection 13.18. Minor modifications may only:</p> <ol style="list-style-type: none"> <li>a. Correct typographical errors;</li> <li>b. Require more frequent monitoring or reporting by the permittee;</li> <li>c. Change an interim compliance date in a schedule of compliance, provided the new date is not more than one hundred-twenty (120) days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement;</li> <li>d. Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director; or</li> </ol> | The rule was not updated to include text related to amending Class VI project plans analogous to 144.41(h). |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                           |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                       |
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| Cont'd<br>144.41*                                                       |                                                                                                                                                                           |                                                | <p>e. Allow the following:</p> <ol style="list-style-type: none"> <li>1. Change quantities or types of fluids injected which are within the capacity of the facility as permitted, and in the judgement of the Director would not interfere with the operation of the facility or its ability to meet conditions prescribed in the permit, and would not change its classification;</li> <li>2. Change construction requirements approved by the Director pursuant to subdivision 13.7.a, provided that any such alteration shall comply with the requirements of this rule; and</li> <li>3. Amend a plugging and abandonment plan which has been updated under subdivision 13.6.e</li> </ol> | Same                                                                                                                                                                                                                                  |
| <b>Subpart E—Permit Conditions</b>                                      |                                                                                                                                                                           |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                       |
| 144.51 (j)(4)                                                           | Owners or operators of Class VI wells shall retain records as specified in subpart H of part 146, including §§ 146.84(g), 146.91(f), 146.92(d), 146.93(f), and 146.93(h). |                                                | NONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | The 2020 update does not include this provision among the conditions applicable to all permits; however recordkeeping requirements identical to 146.91(f) are at 13.6.c.1.F. Revisions to be consistent with the CFR are recommended. |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                  |                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| 144.51(o)                                                               | Where a plugging and abandonment plan meets the necessary requirements, the Director shall incorporate it into the permit as a permit condition. | Title 47 Series 13 Chapter 13.7.f [Injection Well Permitting Program - UIC] | 13.7.f. Plugging and abandonment. Any Class 1, 2, 3 or 6 permit shall include, and any Class 5 permit may include, conditions to ensure that plugging and abandonment of the well will not allow the movement of fluids either into an underground source of drinking water or from one underground source of drinking water to another. Any applicant for a UIC permit shall be required to submit a plan for plugging and abandonment. Where the plan meets the requirements of this paragraph, the Director shall incorporate it into the permit as a condition. Where the Director's review of an application indicates that the permittee's plan is inadequate, the Director shall require the applicant to revise the plan, prescribe conditions meeting the requirements of this paragraph, or deny the application. For purposes of this paragraph, temporary intermittent cessation of injection operations is not abandonment. The owner or operator of a Class 6 well shall submit revisions to the method of closure no later than the date on which closure notification is required. The Director should be notified at least 45 days prior to the abandonment of any Class 5 injection well. | <p>The 2020 update to the rule requires Class VI operators to submit updates to their plugging plan; however there is no explicit provision in the conditions applicable to all permits that the well plugging plan be incorporated as a permit condition.</p> <p>However at 47-13-13.4.b. maintaining and implementing an approved plan is directly enforceable regardless of whether it is a condition of the permit (see 146.92(b)).</p> <p>Revisions to be consistent with the CFR are recommended.</p> |

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| 144.51(q)     | <p>The permittee of a Class I, II, III, or VI well shall establish and maintain mechanical integrity.</p> <p>When the Director determines that a Class I, II, III, or VI well lacks mechanical integrity he shall give written notice to the permittee. Unless the Director requires immediate cessation, the owner must cease injection within 48 hours of receipt. The Director may allow plugging of the well or require additional construction, operation, monitoring, reporting, and corrective action as is necessary to prevent the movement of fluid into or between USDWs caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the Director that the owner or operator has demonstrated mechanical integrity.</p> <p>The Director may allow the permittee of a well which lacks mechanical integrity to continue injection if the permittee has made satisfactory demonstration that there is no fluid movement into USDWs.</p> | <p>Title 47 Series 13 Chapter 14.7.h<br/>[Injection Well Permitting Program - UIC]</p> <p>Title 47 Series 13 Chapter 8.4 and 8.5<br/>[Criteria and Standards Applicable to Class 1 Wells - UIC]</p> <p>Title 47 Series 13 Chapter 10.4 and 10.5<br/>[Criteria and Standards Applicable to Class 3 Wells - UIC]</p> | <p>14.7.h. Mechanical integrity. The permittee of a Class 1, 2, 3, or 6 well shall establish and maintain mechanical integrity. A permit for any Class 1, 2, 3 or 6 well or injection project which lacks mechanical integrity shall include, and for any Class 5 well may include, a condition prohibiting injection operations until the permittee shows to the satisfaction of the Director under subsection 6.2 that the well has mechanical integrity.</p> <p>8.4.b.3. Demonstration of mechanical integrity at least every five (5) years during the life of the well;</p> <p>8.5. Information to be Considered by the Director Prior to the Issuance of a Permit.<br/>8.5.a.20. A satisfactory demonstration of mechanical integrity under subdivision 13.7.h and subsection 6.2; and</p> <p>10.4.b.3. Demonstration of mechanical integrity pursuant to subsection 6.2 at least every five (5) years during the life of the well for salt solution mining;</p> <p>10.5. Information to be Considered by the Director Prior to the Issuance of a Permit.<br/>10.5.a.17. A satisfactory demonstration of mechanical integrity for all new wells and for all existing salt solution wells as required by subsection 6.2.</p> | <p>The state's UIC rule prohibits injection until demonstration that the well has mechanical integrity, but it does not appear to specifically require "maintenance" of integrity.</p> <p>The rule does not specify the actions the Director can take if the Director determines a well lacks mechanical integrity.</p> <p>Recommendation: Revise to match the federal requirements, or identify law or regulation with similar requirement.</p> <p>The 2020 update adds a requirement to establish and maintain mechanical integrity for all well classes, including class 6. This is equivalent.</p> |
| 144.52 (a)(2) | Corrective action as set forth in §§ 144.55, 146.7, and 146.84.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Title 47 Series 13 Chapter 13.7.b<br>[Injection Well]                                                                                                                                                                                                                                                              | Corrective action as set forth in subsections 6.1 and 14.9.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>Same</p> <p>This Class VI addition is addressed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt "optional" program elements such as authorization by rule.

| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |         |                                                |         |            |
|-------------------------------------------------------------------------|---------|------------------------------------------------|---------|------------|
| Code of Federal Regulations                                             |         | Current WEST VIRGINIA Statutes and Regulations |         | Difference |
| Citation                                                                | Summary | Citation                                       | Summary |            |
|                                                                         |         | Permitting Program<br>- UIC]                   |         |            |

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*West Virginia: Checklist for State UIC Regulations*  
*March 2021*

*[ PAGE ]*

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| <p>144.52<br/>(a)(7)(i)</p> | <p>The permittee, including the transferor of a permit, must demonstrate and maintain financial responsibility and resources to close, plug, and abandon the well until:</p> <ol style="list-style-type: none"> <li>1) the well has been plugged and abandoned and the report submitted; or</li> <li>2) the well has been converted; or</li> <li>3) the transferor of the permit receives notice that the transferee has demonstrated financial responsibility.</li> </ol> | <p>Title 47 Series 13:<br/>Chapter 13.7.g and 13.17.<br/>[Injection Well Permitting Program - UIC]</p> <p>Chapter 8.3 and 8.5<br/>[Criteria and Standards Applicable to Class 1 Wells - UIC]</p> | <p>13.7.g. Financial responsibility. The permit shall require the permittee including the transferor of a permit, to demonstrate and maintain financial responsibility and resources to close, plug, and abandon underground injection wells in a manner prescribed by the Director until: the well has been plugged and abandoned and the report submitted; or the well has been converted; or the transferor of the permit receives notice that the transferee has demonstrated financial responsibility. The permittee must show evidence of financial responsibility ... by submission of a surety bond, or other adequate assurance, such as a financial statement ....</p> <p>13.17. Transfer of Permits<br/>13.17.b.2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility .... the notice demonstrates that the financial responsibility requirements of subdivision 13.7.g will be met by new permittee</p> <p>8.3.d. The owner or operator shall assure, through a performance bond or other appropriate means, the availability of resources necessary for the proper abandonment of the well as required in subdivision 13.7.g.</p> <p>8.5.a.19. A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources</p> | <p>Similar. The rule does not specify what actions must be demonstrated (e.g., plugging, conversion) to release the permittee from financial responsibility. The 2020 update describes when financial responsibility obligations end.</p> <p>But see WV Code at 22-6-26(a) (bond conditioned on full compliance with laws and rules relating to drilling and to plugging).</p> <p>The 2020 update includes specific financial responsibility for class 6 wells (see 146.85) within the conditions applicable to all permits.</p> <p>Recommendation: Revise to match the federal requirement.</p> <p>Or explain in the program description the requirement for bond release specified in the WV Code at 22-6-26(a) and that the requirement applies to all wells Class 1 -3. Or identify law or regulation with similar requirement on bond release.</p> |
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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                   |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| Code of Federal Regulations                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Current WEST VIRGINIA Statutes and Regulations                                    |                                                                                                                                                                                                                                                     | Difference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Citation                                                                | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Citation                                                                          | Summary                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                   | necessary to close, plug or abandon the well under subdivision 13.7.g;                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 144.52<br>(a)(7)(ii)                                                    | Evidence of financial responsibility may be by submission of a security bond or other adequate assurance. The owner or operator of a well injecting hazardous waste must comply with the financial responsibility requirements of subpart F of this part. For Class VI wells, evidence of financial responsibility shall be by submission of a qualifying instrument (see § 146.85(a)), such as a financial statement or other materials acceptable to the Director. The owner or operator of a Class VI well must comply with the financial responsibility requirements set forth in § 146.85. | Title 47 Series 13<br>Chapter 13.7.g<br>[Injection Well Permitting Program - UIC] | Financial responsibility. ... The permittee must show evidence of financial responsibility to the Director by submission of a surety bond, or other adequate assurance, such as a financial statement or other material acceptable to the Director. | <p>Similar. However, the rule does not specify that Class 1 wells must comply with subpart F of the federal regulation (but provisions of subpart F are not required for primacy under 40 CFR 145.11.)</p> <p>The 2020 update includes specific financial responsibility for class 6 wells (see 146.85) within the conditions applicable to all permits.</p> <p>The state UIC regulation has requirements similar to the federal rule at CSR 47-13-13.7.g., and these citations appear to apply to Class II wells.</p> |

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| [ SEQ CHAPTER \h \r 1]40 CFR Part 144 vs. WEST VIRGINIA UIC Regulations |                                                                                                                                                                                                                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                             |
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| Code of Federal Regulations                                             |                                                                                                                                                                                                                                                                         | Current WEST VIRGINIA Statutes and Regulations                                    |                                                                                                                                                                                                                                                                                                                                                       | Difference                                                                                                                                                                                                                                  |
| Citation                                                                | Summary                                                                                                                                                                                                                                                                 | Citation                                                                          | Summary                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                             |
| 144.52 (a)(8)                                                           | A permit for any Class I, II, III, or VI well or injection project which lacks mechanical integrity shall include, and for any Class V well may include, a condition prohibiting injection operations until the permittee shows that the well has mechanical integrity. | Title 47 Series 13<br>Chapter 14.7.h<br>[Injection Well Permitting Program - UIC] | Mechanical integrity. ...A permit for any Class 1, 2, 3, or 6 well or injection project which lacks mechanical integrity shall include, and for any Class 5 well may include, a condition prohibiting injection operations until the permittee shows to the satisfaction of the Director under subsection 6.2 that the well has mechanical integrity. | Same, except the subsection 6.2 is not exactly the same as 40 CFR 146.8, which the federal rule refers to.<br><br>The 2020 update adds a requirement to establish and maintain mechanical integrity for all well classes including class 6. |

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| Code of Federal Regulations                                                |                                                                                                                                                              | West Virginia Statutes and Regulations |                                                                                                                                                                                                                                                                                                                                                                                                                                            | Difference                                                                                                                                                                 |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Section                                                                    | Summary                                                                                                                                                      | Section                                | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                            |
| 40 CFR 146 – Underground Injection Control Program: Criteria and Standards |                                                                                                                                                              |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
| Subpart A – General Provisions                                             |                                                                                                                                                              |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
|                                                                            |                                                                                                                                                              |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
| 146.3                                                                      | § 146.3 Definitions.                                                                                                                                         |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                            | See also 146.81                                                                                                                                                            |
| 146.3                                                                      | Confining zone means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement above an injection zone. | 47-13-2.12 Definitions.                | "Confining zone" means a geological formation, group of formations, or part of a formation stratigraphically overlying the injection zone(s) that is that acts as barrier to fluid movement above an injection zone. For Class 6 wells operating under an injection depth waiver, confining zone means a geologic formation, group of formations, or part of a formation stratigraphically overlying and underlying the injection zone(s). | The definition of confining zone was revised in 2020; it is generally similar to the CFR. It also modifies the definition for Class VI wells with injection depth waivers. |

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| 146.4 | <p><b>§ 146.4 Criteria for exempted aquifers.</b><br/>This section defines the criteria to exempt an aquifer under this program. For Class I-V wells, an aquifer may be exempted if it is not currently a source of drinking water, if total dissolved solids content is &gt;3,000 but &lt;10,000 mg/l, or if it cannot be used as a source because:</p> <ol style="list-style-type: none"> <li>1) It is mineral, hydrocarbon or geothermal energy producing, or is part of a permit application for a Class II or III operation.</li> <li>2) It is at a depth or location which makes recovery of drinking water impractical;</li> <li>3) It is so contaminated that it would be impractical to render that water fit for human consumption; or</li> <li>4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse.</li> </ol> <p>The areal extent of an aquifer exemption for a Class II EOR/EGR well may be expanded for the exclusive purpose of Class VI injection for geologic sequestration under § 144.7(d) if:</p> <ol style="list-style-type: none"> <li>1) It is not currently a source of drinking water; and</li> <li>2) Total dissolved solids content of the ground water is &gt;3,000 but &lt;10,000 mg/l; and</li> <li>3) It is not reasonably expected to supply a public water system.</li> </ol> | 47-13-3.1.<br>Criteria for Exempted Aquifer Status | <p>3.1. An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in section 2 may be determined to be an exempted aquifer if it meets the following criteria:</p> <p>3.1.a. It does not currently serve as a source of drinking water; and</p> <p>3.1.b. It cannot now and will not in the future serve as a source of drinking water because:</p> <p>3.1.b.1. It is a mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class 2 or 3 operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible;</p> <p>3.1.b.2. It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;</p> <p>3.1.b.3. It is so contaminated that it would be economically or technologically impractical to render the water fit for human consumption; or</p> <p>3.1.b.4. It is located over a Class 3 well mining area subject to subsidence or catastrophic collapse; or</p> <p>3.1.c. The Total Dissolved Solids content of the groundwater is more than three-thousand (3,000) and less than ten-thousand (10,000) mg/1 and it is not reasonably expected to supply a public water system.</p> | <p>The state regulation does not address Class VI.</p> <p>This provision is unchanged in 2020 and does not include the requirements for expanding the areal extent analogous to 146.4(d). Revisions to be consistent with the CFR are recommended.</p> |
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| <b>Subpart H - Criteria and Standards Applicable to Class VI Wells</b> |                                                                                                                                                                                                                                                         |             |                                                                                                                                                                                                                                                                                                        |          |
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| 40 CFR 146.81(a)                                                       | <b>40 CFR 146.81 Applicability.</b><br><br>This subpart establishes criteria and standards for underground injection control programs to regulate any Class VI carbon dioxide geologic sequestration injection wells.                                   | 47-13-13.1. | General. This section sets forth requirements for underground injection control programs to regulate Class 6 carbon dioxide geologic sequestration wells.                                                                                                                                              | Similar. |
| 40 CFR 146.81(b)                                                       | This subpart applies to any wells used to inject carbon dioxide specifically for the purpose of geologic sequestration, i.e., the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. | 47-13-13.1  | ...This section establishes criteria and standards for underground injection control programs to regulate any Class 6 carbon dioxide geologic sequestration injection wells, for long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. | Similar. |

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| 40 CFR 146.81(c) | This subpart also applies to owners or operators of permit- or rule-authorized Class I, Class II, or Class V experimental carbon dioxide injection projects who seek to apply for a Class VI geologic sequestration permit for their well or wells. Owners or operators seeking to convert existing Class I, Class II, or Class V experimental wells to Class VI geologic sequestration wells must demonstrate to the Director that the wells were engineered and constructed to meet the requirements at 40 CFR 146.86(a) and ensure protection of USDWs, in lieu of requirements at 40 CFR 146.86(b) and 146.87(a). By December 10, 2011, owners or operators of either Class I wells previously permitted for the purpose of geologic sequestration or Class V experimental technology wells no longer being used for experimental purposes that will continue injection of carbon dioxide for the purpose of GS must apply for a Class VI permit. A converted well must still meet all other requirements under part 146. | 47-13-13.1.a. | This subpart also applies to owners or operators of permit or rule-authorized Class 1, Class 2, or Class 5 experimental carbon dioxide injection projects who seek to apply for a Class 6 geologic sequestration permit for their well or wells. Owners or operators seeking to convert existing Class 1, Class 2, or Class 5 experimental wells to Class 6 geologic sequestration wells must demonstrate to the Director that the wells were engineered and constructed to meet the requirements at subsection 13.3.a. and ensure protection of USDWs, in lieu of requirements at subsection 13.3.b., 13.3.b.1. and 13.5. By December 10, 2011, owners or operators of either Class 1 wells previously permitted for the purpose of geologic sequestration or Class 5 experimental technology wells no longer being used for experimental purposes that will continue injection of carbon dioxide for the purpose of GS must apply for a Class 6 permit. A converted well must still meet all other requirements under section 13-13. | Similar.                                                                                                                                                          |
| 40 CFR 146.81(d) | <i>Definitions.</i> The following definitions apply to this subpart. To the extent that these definitions conflict with those in 40 CFR 144.3 or 146.3, these definitions govern for Class VI wells:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 47-13-2       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | The definitions below are part of the general UIC definitions section in §47-13-2, and are not indicated to be specific to Class VI, except as noted in the text. |

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|  | Area of review means the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and displaced fluids, and is based on available site characterization, monitoring, and operational data as set forth in § 146.84. | 47-13-2.5.a. | For Class 6 well types, “area of review” means the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and displaced fluids, and is based on available site characterization, monitoring, and operational data as set forth in section 5.4. | Similar.                                                            |
|  | Carbon dioxide plume means the extent underground, in three dimensions, of an injected carbon dioxide stream.                                                                                                                                                                                                                                                                                                                                      | 47-13-2.7.   | “Carbon dioxide plume” means the extent underground, in three dimensions, of an injected carbon dioxide stream.                                                                                                                                                                                                                                                                                                                                                                 | Similar.                                                            |
|  | Carbon dioxide stream means carbon dioxide that has been captured from an emission source (e.g., a power plant), plus incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve the injection process. This subpart does not apply to any carbon dioxide stream that meets the definition of a hazardous waste under 40 CFR part 261.                | 47-13-2.8.   | “Carbon dioxide stream” means carbon dioxide that has been captured from an emission source (e.g., a power plant), plus incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve the injection process. This subpart does not apply to any carbon dioxide stream that meets the definition of a hazardous waste under 40 CFR part 261.                                           | Same.                                                               |
|  | Confining zone means a geologic formation, group of formations, or part of a formation stratigraphically overlying the injection zone(s) that acts as barrier to fluid movement. For Class VI wells operating under an injection depth waiver, confining zone means a geologic formation, group of formations, or part of a formation stratigraphically overlying and underlying the injection zone(s).                                            | 47-13-2.14.  | "Confining zone" means a geological formation, group of formations, or part of a formation stratigraphically overlying the injection zone(s) that that acts as barrier to fluid movement above an injection zone. For Class 6 wells operating under an injection depth waiver, confining zone means a geologic formation, group of formations, or part of a formation stratigraphically overlying and underlying the injection zone(s).                                         | Similar.<br><br>Note typo: "...injection zone(s) that that acts..." |

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|  | Corrective action means the use of Director-approved methods to ensure that wells within the area of review do not serve as conduits for the movement of fluids into underground sources of drinking water (USDW).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 47-13-2.17. | “Corrective action” means the use of Director-approved methods to ensure that wells within the area of review do not serve as conduits for the movement of fluids into underground sources of drinking water (USDW).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Same. |
|  | Geologic sequestration means the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. This term does not apply to carbon dioxide capture or transport.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 47-13-2.32. | “Geologic sequestration means the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. This term does not apply to carbon dioxide capture or transport.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Same. |
|  | Geologic sequestration project means an injection well or wells used to emplace a carbon dioxide stream beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to requirements at § 146.95; or, wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to §§ 146.4 and 144.7(d) of this chapter. It includes the subsurface three-dimensional extent of the carbon dioxide plume, associated area of elevated pressure, and displaced fluids, as well as the surface area above that delineated region. | 47-13-2.33. | “Geologic sequestration project means an injection well or wells used to emplace a carbon dioxide stream beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to requirements at § 47CSR13.14.8.d.; or, wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to §§ 146.4 and 144.7(d) of this chapter. It includes the subsurface three-dimensional extent of the carbon dioxide plume, associated area of elevated pressure, and displaced fluids, as well as the surface area above that delineated region. | Same. |

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|  | Injection zone means a geologic formation, group of formations, or part of a formation that is of sufficient areal extent, thickness, porosity, and permeability to receive carbon dioxide through a well or wells associated with a geologic sequestration project.                                                                                   | 47-13-2.39. | "Injection zone" means a geological "formation", group of formations or part of a formation receiving fluids through a "well" and for carbon capture wells, the formation that is of sufficient areal extent, thickness, porosity, and permeability to receive carbon dioxide through a well or wells associated with a geologic sequestration project.  | Similar.<br><br>The Class VI-specific clarification refers to "carbon capture wells," not "Class 6 wells" or "wells used for geologic sequestration of carbon dioxide." Clarification is suggested. |
|  | Post-injection site care means appropriate monitoring and other actions (including corrective action) needed following cessation of injection to ensure that USDWs are not endangered, as required under § 146.93.                                                                                                                                     | 47-13-2.53. | "Post-injection site" care means appropriate monitoring and other actions (including corrective action) needed following cessation of injection to ensure that USDWs are not endangered by Class 6 wells, as required under subsection 13.9.                                                                                                             | Similar.<br>Move " mark to after care                                                                                                                                                               |
|  | Pressure front means the zone of elevated pressure that is created by the injection of carbon dioxide into the subsurface. For the purposes of this subpart, the pressure front of a carbon dioxide plume refers to a zone where there is a pressure differential sufficient to cause the movement of injected fluids or formation fluids into a USDW. | 47-13-2.55. | "Pressure front" means the zone of elevated pressure that is created by the injection of carbon dioxide into the subsurface. For the purposes of this subpart, the pressure front of a carbon dioxide plume refers to a zone where there is a pressure differential sufficient to cause the movement of injected fluids or formation fluids into a USDW. | Same.                                                                                                                                                                                               |
|  | Site closure means the point/time, as determined by the Director following the requirements under § 146.93, at which the owner or operator of a geologic sequestration site is released from post-injection site care responsibilities.                                                                                                                | 47-13-2.66. | "Site closure" means the point/time, as determined by the Director following the requirements under subsection 13.9., at which the owner or operator of a geologic sequestration site is released from post-injection site care responsibilities.                                                                                                        | Same.                                                                                                                                                                                               |
|  | Transmissive fault or fracture means a fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.                                                                                                                                                                                              | 47-13-2.76. | "Transmissive Fault" is a type of fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.                                                                                                                                                                                                     | Slightly different terms are defined, but the definition is the same. The term is used consistently in the rule, so no concern for stringency.                                                      |

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| 40 CFR 146.82       | <p><b>40 CFR 146.82 Required Class VI permit information.</b></p> <p>This section sets forth the information which must be considered by the Director in authorizing Class VI wells. For converted Class I, Class II, or Class V experimental wells, certain maps, cross-sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current, readily available to the Director, and sufficiently identified to be retrieved.</p> | 47-13-13.8.     | Required Class 6 Permit Information.                                                                                                                                                                                                                                           | The introductory text in the CFR is not included in West Virginia's rule. West Virginia's rule does not allow the incorporation of some information by reference (this is allowed for some other classes however); no impact on stringency. |
| 40 CFR 146.82(a)    | Prior to the issuance of a permit for the construction of a new Class VI well or the conversion of an existing Class I, Class II, or Class V well to a Class VI well, the owner or operator shall submit, pursuant to 40 CFR 146.91(e), and the Director shall consider the following:                                                                                                                                                                                                                          | 47-13-13.8.a.   | Prior to the issuance of a permit for the construction of a new Class 6 well or the conversion of an existing Class I, Class 2, or Class 5 well to a Class 6 well, the owner or operator shall submit, pursuant to 13.6.c.1.E., and the Director shall consider the following: | Similar.                                                                                                                                                                                                                                    |
| 40 CFR 146.82(a)(1) | Information required in 40 CFR 144.31 (e)(1) through (6);                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 47-13-13.8.a.1. | Information required in section 10.d. of this rule;                                                                                                                                                                                                                            | Similar.                                                                                                                                                                                                                                    |

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| 40 CFR 146.82(a)(2)     | A map showing the injection well for which a permit is sought and the applicable area of review consistent with 40 CFR 146.84. Within the area of review, the map must show the number or name, and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, State- or EPA-approved subsurface cleanup sites, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features including structures intended for human occupancy, State, Tribal, and Territory boundaries, and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map; | 47-13-13.8.a.2.   | A map showing the injection well for which a permit is sought and the applicable area of review consistent with section 5.4. and subsection 14.9.b.5. Within the area of review, the map must show the number or name, and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, State- or EPA-approved subsurface cleanup sites, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features including structures intended for human occupancy, State, Tribal, and Territory boundaries, and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map; | Same.<br><br>Note that there is also a similar requirement at 10.d.6.A for the contents of a map for Class 6 permit applications. See 144.31(e). |
| 40 CFR 146.82(a)(3)     | Information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, including:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 47-13-13.8.a.3.   | Information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, including:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Same.                                                                                                                                            |
| 40 CFR 146.82(a)(3)(i)  | Maps and cross sections of the area of review;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 47-13-13.8.a.3.A. | Maps and cross sections of the area of review;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Same.                                                                                                                                            |
| 40 CFR 146.82(a)(3)(ii) | The location, orientation, and properties of known or suspected faults and fractures that may transect the confining zone(s) in the area of review and a determination that they would not interfere with containment;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 47-13-13.8.a.3.B. | The location, orientation, and properties of known or suspected faults and fractures that may transect the confining zone(s) in the area of review and a determination that they would not interfere with containment;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Same.                                                                                                                                            |

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| 40 CFR<br>146.82(a)(3)(iii) | Data on the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of the injection and confining zone(s); including geology/facies changes based on field data which may include geologic cores, outcrop data, seismic surveys, well logs, and names and lithologic descriptions; | 47-13-13.8.a.3.C. | Data on the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of the injection and confining zone(s); including geology/facies changes based on field data which may include geologic cores, outcrop data, seismic surveys, well logs, and names and lithologic descriptions; | Same. |
| 40 CFR<br>146.82(a)(3)(iv)  | Geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone(s);                                                                                                                                                                                    | 47-13-13.8.a.3.D. | Geo-mechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone(s);                                                                                                                                                                                   | Same. |
| 40 CFR<br>146.82(a)(3)(v)   | Information on the seismic history including the presence and depth of seismic sources and a determination that the seismicity would not interfere with containment; and                                                                                                                                               | 47-13-13.8.a.3.E. | Information on the seismic history including the presence and depth of seismic sources and a determination that the seismicity would not interfere with containment; and                                                                                                                                               | Same. |
| 40 CFR<br>146.82(a)(3)(vi)  | Geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the local area.                                                                                                                                                                            | 47-13-13.8.a.3.F. | Geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the local area.                                                                                                                                                                            | Same. |
| 40 CFR<br>146.82(a)(4)      | A tabulation of all wells within the area of review which penetrate the injection or confining zone(s). Such data must include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require;          | 47-13-13.8.a.4.   | A tabulation of all wells within the area of review which penetrate the injection or confining zone(s). Such data must include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require;          | Same. |
| 40 CFR<br>146.82(a)(5)      | Maps and stratigraphic cross sections indicating the general vertical and lateral limits of all USDWs, water wells and springs within the area of review, their positions relative to the injection zone(s), and the direction of water movement, where known;                                                         | 47-13-13.8.a.5.   | Maps and stratigraphic cross sections indicating the general vertical and lateral limits of all USDWs, water wells and springs within the area of review, their positions relative to the injection zone(s), and the direction of water movement, where known;                                                         | Same. |

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| 40 CFR 146.82(a)(6)      | Baseline geochemical data on subsurface formations, including all USDWs in the area of review;                                                                                                                         | 47-13-13.8.a.6.   | Baseline geochemical data on subsurface formations, including all USDWs in the area of review;                                                                                                                         | Same. |
| 40 CFR 146.82(a)(7)      | Proposed operating data for the proposed geologic sequestration site:                                                                                                                                                  | 47-13-13.8.a.7.   | Proposed operating data for the proposed geologic sequestration site:                                                                                                                                                  | Same. |
| 40 CFR 146.82(a)(7)(i)   | Average and maximum daily rate and volume and/or mass and total anticipated volume and/or mass of the carbon dioxide stream;                                                                                           | 47-13-13.8.a.7.A. | Average and maximum daily rate and volume and/or mass and total anticipated volume and/or mass of the carbon dioxide stream;                                                                                           | Same. |
| 40 CFR 146.82(a)(7)(ii)  | Average and maximum injection pressure;                                                                                                                                                                                | 47-13-13.8.a.7.B. | Average and maximum injection pressure;                                                                                                                                                                                | Same. |
| 40 CFR 146.82(a)(7)(iii) | The source(s) of the carbon dioxide stream; and                                                                                                                                                                        | 47-13-13.8.a.7.C. | The source(s) of the carbon dioxide stream; and                                                                                                                                                                        | Same. |
| 40 CFR 146.82(a)(7)(iv)  | An analysis of the chemical and physical characteristics of the carbon dioxide stream.                                                                                                                                 | 47-13-13.8.a.7.D. | An analysis of the chemical and physical characteristics of the carbon dioxide stream.                                                                                                                                 | Same. |
| 40 CFR 146.82(a)(8)      | Proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) and that meets the requirements at 40 CFR 146.87; | 47-13-13.8.a.8.   | Proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) and that meets the requirements at section 13.5.; | Same. |
| 40 CFR 146.82(a)(9)      | Proposed stimulation program, a description of stimulation fluids to be used and a determination that stimulation will not interfere with containment;                                                                 | 47-13-13.8.a.9.   | Proposed stimulation program, a description of stimulation fluids to be used and a determination that stimulation will not interfere with containment;                                                                 | Same. |
| 40 CFR 146.82(a)(10)     | Proposed procedure to outline steps necessary to conduct injection operation;                                                                                                                                          | 47-13-13.8.a.10.  | Proposed procedure to outline steps necessary to conduct injection operation;                                                                                                                                          | Same. |
| 40 CFR 146.82(a)(11)     | Schematics or other appropriate drawings of the surface and subsurface construction details of the well;                                                                                                               | 47-13-13.8.a.11.  | Schematics or other appropriate drawings of the surface and subsurface construction details of the well;                                                                                                               | Same. |

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| 40 CFR 146.82(a)(12) | Injection well construction procedures that meet the requirements of 40 CFR 146.86;                                                                                                                                                | 47-13-13.8.a.12. | Injection well construction procedures that meet the requirements of section 13.3;                                                                                                                                                    | Same. |
| 40 CFR 146.82(a)(13) | Proposed area of review and corrective action plan that meets the requirements under 40 CFR 146.84;                                                                                                                                | 47-13-13.8.a.13. | Proposed area of review and corrective action plan that meets the requirements under section 5.4. and subsection 14.9.b.5.;                                                                                                           | Same. |
| 40 CFR 146.82(a)(14) | A demonstration, satisfactory to the Director, that the applicant has met the financial responsibility requirements under 40 CFR 146.85;                                                                                           | 47-13-13.8.a.14. | A demonstration, satisfactory to the Director, that the applicant has met the financial responsibility requirements under subsection 14.7.g.;                                                                                         | Same. |
| 40 CFR 146.82(a)(15) | Proposed testing and monitoring plan required by 40 CFR 146.90;                                                                                                                                                                    | 47-13-13.8.a.15. | Proposed testing and monitoring plan required by subsection 13.6.b.;                                                                                                                                                                  | Same. |
| 40 CFR 146.82(a)(16) | Proposed injection well plugging plan required by 40 CFR 146.92(b);                                                                                                                                                                | 47-13-13.8.a.16. | Proposed injection well plugging plan required by subsection 13.4.b.;                                                                                                                                                                 | Same. |
| 40 CFR 146.82(a)(17) | Proposed post-injection site care and site closure plan required by 40 CFR 146.93(a);                                                                                                                                              | 47-13-13.8.a.17. | Proposed post-injection site care and site closure plan required by subsection 13.9.a.;                                                                                                                                               | Same. |
| 40 CFR 146.82(a)(18) | At the Director's discretion, a demonstration of an alternative post-injection site care timeframe required by 40 CFR 146.93(c);                                                                                                   | 47-13-13.8.18.   | At the Director's discretion, a demonstration of an alternative post-injection site care timeframe required by subsection 13.9.c.;                                                                                                    | Same. |
| 40 CFR 146.82(a)(19) | Proposed emergency and remedial response plan required by 40 CFR 146.94(a);                                                                                                                                                        | 47-13-13.8.a.19. | Proposed emergency and remedial response plan required by subsection 13.7.a.;                                                                                                                                                         | Same. |
| 40 CFR 146.82(a)(20) | A list of contacts, submitted to the Director, for those States, Tribes, and Territories identified to be within the area of review of the Class VI project based on information provided in paragraph (a)(2) of this section; and | 47-13-13.8.a.20. | A list of contacts, submitted to the Director, for those States, Tribes, and Territories identified to be within the area of review of the Class 6 project based on information provided in subsection 13.8.a.2. of this section; and | Same. |
| 40 CFR 146.82(a)(21) | Any other information requested by the Director.                                                                                                                                                                                   | 47-13-13.8.a.21. | Any other information requested by the Director.                                                                                                                                                                                      | Same. |

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| 40 CFR 146.82(b)    | The Director shall notify, in writing, any States, Tribes, or Territories within the area of review of the Class VI project based on information provided in paragraphs (a)(2) and (a)(20) of this section of the permit application and pursuant to the requirements at 40 CFR 145.23(f)(13).                                                                                               | 47-13-13.8.b.   | The Director shall notify, in writing, any States, Tribes, or Territories within the area of review of the Class 6 project based on information provided in paragraphs (a)(2) and (a)(20) of this section of the permit application and pursuant to the requirements at § 40CFR 145.23(f)(13).                                                                                               | Same. |
| 40 CFR 146.82(c)    | Prior to granting approval for the operation of a Class VI well, the Director shall consider the following information:                                                                                                                                                                                                                                                                      | 47-13-13.8.c.   | Prior to granting approval for the operation of a Class 6 well, the Director shall consider the following information:                                                                                                                                                                                                                                                                       | Same. |
| 40 CFR 146.82(c)(1) | The final area of review based on modeling, using data obtained during logging and testing of the well and the formation as required by paragraphs (c)(2), (3), (4), (6), (7), and (10) of this section;                                                                                                                                                                                     | 47-13-13.8.c.1. | The final area of review based on modeling, using data obtained during logging and testing of the well and the formation as required by subsections 13.8.c.2., 13.8.c.3., 13.8.c.4., 13.8.c.6., 13.8.c.7., and 13.8.c.10.;                                                                                                                                                                   | Same. |
| 40 CFR 146.82(c)(2) | Any relevant updates, based on data obtained during logging and testing of the well and the formation as required by paragraphs (c)(3), (4), (6), (7), and (10) of this section, to the information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, submitted to satisfy the requirements of paragraph (a)(3) of this section; | 47-13-13.8.c.2. | Any relevant updates, based on data obtained during logging and testing of the well and the formation as required by subsections 13.8.c.3., 13.8.c.4., 13.8.c.6., 13.8.c.7., and 13.8.c.10., to the information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, submitted to satisfy the requirements of subsection 13.8.a.3.; | Same. |
| 40 CFR 146.82(c)(3) | Information on the compatibility of the carbon dioxide stream with fluids in the injection zone(s) and minerals in both the injection and the confining zone(s), based on the results of the formation testing program, and with the materials used to construct the well;                                                                                                                   | 47-13-13.8.c.3. | Information on the compatibility of the carbon dioxide stream with fluids in the injection zone(s) and minerals in both the injection and the confining zone(s), based on the results of the formation testing program, and with the materials used to construct the well;                                                                                                                   | Same. |
| 40 CFR 146.82(c)(4) | The results of the formation testing program required at paragraph (a)(8) of this section;                                                                                                                                                                                                                                                                                                   | 47-13-13.8.c.4. | The results of the formation testing program required at subsection 13.8.a.8.;                                                                                                                                                                                                                                                                                                               | Same. |

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| 40 CFR 146.82(c)(5)  | Final injection well construction procedures that meet the requirements of 40 CFR 146.86;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 47-13-13.8.c.5.  | Final injection well construction procedures that meet the requirements of section 13.3.;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Same. |
| 40 CFR 146.82(c)(6)  | The status of corrective action on wells in the area of review;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 47-13-13.8.c.6.  | The status of corrective action on wells in the area of review;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Same. |
| 40 CFR 146.82(c)(7)  | All available logging and testing program data on the well required by 40 CFR 146.87;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 47-13-13.8.c.7.  | All available logging and testing program data on the well required by section 13.5.;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Same. |
| 40 CFR 146.82(c)(8)  | A demonstration of mechanical integrity pursuant to 40 CFR 146.89;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 47-13-13.8.c.8.  | A demonstration of mechanical integrity pursuant to section 6.2;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Same. |
| 40 CFR 146.82(c)(9)  | Any updates to the proposed area of review and corrective action plan, testing and monitoring plan, injection well plugging plan, post-injection site care and site closure plan, or the emergency and remedial response plan submitted under paragraph (a) of this section, which are necessary to address new information collected during logging and testing of the well and the formation as required by all paragraphs of this section, and any updates to the alternative post-injection site care timeframe demonstration submitted under paragraph (a) of this section, which are necessary to address new information collected during the logging and testing of the well and the formation as required by all paragraphs of this section; and | 47-13-13.8.c.9.  | Any updates to the proposed area of review and corrective action plan, testing and monitoring plan, injection well plugging plan, post-injection site care and site closure plan, or the emergency and remedial response plan submitted under subsection 13.8.a., which are necessary to address new information collected during logging and testing of the well and the formation as required by all paragraphs of this section, and any updates to the alternative post-injection site care timeframe demonstration submitted under subsection 13.8.a., which are necessary to address new information collected during the logging and testing of the well and the formation as required by all paragraphs of this section; and | Same. |
| 40 CFR 146.82(c)(10) | Any other information requested by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 47-13-13.8.c.10. | Any other information requested by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Same. |

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| 40 CFR 146.82(d)    | Owners or operators seeking a waiver of the requirement to inject below the lowermost USDW must also refer to 40 CFR 146.95 and submit a supplemental report, as required at 40 CFR 146.95(a). The supplemental report is not part of the permit application.                                                                                  | 47-13-13.8.d.   | Owners or operators seeking a waiver of the requirement to inject below the lowermost USDW must also refer to subsection 14.8.d. and submit a supplemental report, as required at subsection 14.8.d.1. The supplemental report is not part of the permit application.                                                                         | Same. |
| 40 CFR 146.83(a)    | <b>40 CFR 146.83 Minimum criteria for siting.</b><br><br>Owners or operators of Class VI wells must demonstrate to the satisfaction of the Director that the wells will be sited in areas with a suitable geologic system. The owners or operators must demonstrate that the geologic system comprises:                                        | 47-13-13.2.a.   | Minimum Criteria for Siting.<br>Owners or operators of Class 6 wells must demonstrate to the satisfaction of the Director that the wells will be sited in areas with a suitable geologic system. The owners or operators must demonstrate that the geologic system comprises:                                                                 | Same. |
| 40 CFR 146.83(a)(1) | An injection zone(s) of sufficient areal extent, thickness, porosity, and permeability to receive the total anticipated volume of the carbon dioxide stream;                                                                                                                                                                                   | 47-13-13.2.a.1. | An injection zone(s) of sufficient areal extent, thickness, porosity, and permeability to receive the total anticipated volume of the carbon dioxide stream;                                                                                                                                                                                  | Same. |
| 40 CFR 146.83(a)(2) | Confining zone(s) free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected carbon dioxide stream and displaced formation fluids and allow injection at proposed maximum pressures and volumes without initiating or propagating fractures in the confining zone(s).                       | 47-13-13.2.a.2. | Confining zone(s) free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected carbon dioxide stream and displaced formation fluids and allow injection at proposed maximum pressures and volumes without initiating or propagating fractures in the confining zone(s).                      | Same. |
| 40 CFR 146.83(b)    | The Director may require owners or operators of Class VI wells to identify and characterize additional zones that will impede vertical fluid movement, are free of faults and fractures that may interfere with containment, allow for pressure dissipation, and provide additional opportunities for monitoring, mitigation, and remediation. | 47-13-13.2.b.   | The Director may require owners or operators of Class 6 wells to identify and characterize additional zones that will impede vertical fluid movement, are free of faults and fractures that may interfere with containment, allow for pressure dissipation, and provide additional opportunities for monitoring, mitigation, and remediation. | Same. |

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| 40 CFR 146.84(a) | <p><b>40 CFR 146.84 Area of review and corrective action.</b></p> <p>The area of review is the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and is based on available site characterization, monitoring, and operational data.</p>                                                                                                                                                                                                        | 47-13-2.5.a.    | <p>For Class 6 well types, “area of review” means the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and displaced fluids, and is based on available site characterization, monitoring, and operational data as set forth in section 5.4</p>                                                                                                                                                                                                                                                                                   | <p>This is from the definitions section. It defines the AoR identically to the CFR, and is similar to the text at 146.84(a), but includes “and displaced fluids.”</p> <p>No concerns for stringency.</p> |
| 40 CFR 146.84(b) | <p>The owner or operator of a Class VI well must prepare, maintain, and comply with a plan to delineate the area of review for a proposed geologic sequestration project, periodically reevaluate the delineation, and perform corrective action that meets the requirements of this section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. As a part of the permit application for approval by the Director, the owner or operator must submit an area of review and corrective action plan that includes the following information:</p> | 47-13-14.9.b.5. | <p>Class 6 wells only. When setting corrective action requirements, the Director shall require the owner or operator of the well to prepare, maintain, and comply with a plan to delineate the area of review for a proposed geologic sequestration project, periodically reevaluate the delineation, and perform corrective action that meets the requirements of this section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. As a part of the permit application for approval by the Director, the owner or operator must submit an area of review and corrective action plan that includes the following information:</p> | <p>Similar.</p>                                                                                                                                                                                          |

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| 40 CFR 146.84(b)(1)      | The method for delineating the area of review that meets the requirements of paragraph (c) of this section, including the model to be used, assumptions that will be made, and the site characterization data on which the model will be based;                                                                                                                                                                                                                                   | 47-13-14.9.b.5.A.     | The method for delineating the area of review that meets the requirements of 14.9.c. of this section, including the model to be used, assumptions that will be made, and the site characterization data on which the model will be based;                                                                                                                                                                                                                                   | Same. |
| 40 CFR 146.84(b)(2)      | A description of:                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 47-13-14.9.b.5.B.     | A description of:                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Same. |
| 40 CFR 146.84(b)(2)(i)   | The minimum fixed frequency, not to exceed five years, at which the owner or operator proposes to reevaluate the area of review;                                                                                                                                                                                                                                                                                                                                                  | 47-13-14.9.b.5.B.i.   | The minimum fixed frequency, not to exceed five years, at which the owner or operator proposes to reevaluate the area of review;                                                                                                                                                                                                                                                                                                                                            | Same. |
| 40 CFR 146.84(b)(2)(ii)  | The monitoring and operational conditions that would warrant a reevaluation of the area of review prior to the next scheduled reevaluation as determined by the minimum fixed frequency established in paragraph (b)(2)(i) of this section.                                                                                                                                                                                                                                       | 47-13-14.9.b.5.B.ii.  | The monitoring and operational conditions that would warrant a reevaluation of the area of review prior to the next scheduled reevaluation as determined by the minimum fixed frequency established in 14.9.b.5.B.i. of this section.                                                                                                                                                                                                                                       | Same. |
| 40 CFR 146.84(b)(2)(iii) | How monitoring and operational data (e.g., injection rate and pressure) will be used to inform an area of review reevaluation; and                                                                                                                                                                                                                                                                                                                                                | 47-13-14.9.b.5.B.iii. | How monitoring and operational data (e.g., injection rate and pressure) will be used to inform an area of review reevaluation; and                                                                                                                                                                                                                                                                                                                                          | Same. |
| 40 CFR 146.84(b)(2)(iv)  | How corrective action will be conducted to meet the requirements of paragraph (d) of this section, including what corrective action will be performed prior to injection and what, if any, portions of the area of review will have corrective action addressed on a phased basis and how the phasing will be determined; how corrective action will be adjusted if there are changes in the area of review; and how site access will be guaranteed for future corrective action. | 47-13-14.9.b.5.B.iv.  | How corrective action will be conducted to meet the requirements of 14.9.d. of this section, including what corrective action will be performed prior to injection and what, if any, portions of the area of review will have corrective action addressed on a phased basis and how the phasing will be determined; how corrective action will be adjusted if there are changes in the area of review; and how site access will be guaranteed for future corrective action. | Same. |

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| 40 CFR 146.84(c)         | Owners or operators of Class VI wells must perform the following actions to delineate the area of review and identify all wells that require corrective action:                                                                                                                                                                                                                                                                                                                                                                           | 47-13-14.9.c.     | Owners or operators of Class 6 wells must perform the following actions to delineate the area of review and identify all wells that require corrective action:                                                                                                                                                                                                                                                                                                                                                                            | Same. |
| 40 CFR 146.84(c)(1)      | Predict, using existing site characterization, monitoring and operational data, and computational modeling, the projected lateral and vertical migration of the carbon dioxide plume and formation fluids in the subsurface from the commencement of injection activities until the plume movement ceases, until pressure differentials sufficient to cause the movement of injected fluids or formation fluids into a USDW are no longer present, or until the end of a fixed time period as determined by the Director. The model must: | 47-13-14.9.c.1.   | Predict, using existing site characterization, monitoring and operational data, and computational modeling, the projected lateral and vertical migration of the carbon dioxide plume and formation fluids in the subsurface from the commencement of injection activities until the plume movement ceases, until pressure differentials sufficient to cause the movement of injected fluids or formation fluids into a USDW are no longer present, or until the end of a fixed time period as determined by the Director. The model must: | Same. |
| 40 CFR 146.84(c)(1)(i)   | Be based on detailed geologic data collected to characterize the injection zone(s), confining zone(s) and any additional zones; and anticipated operating data, including injection pressures, rates, and total volumes over the proposed life of the geologic sequestration project;                                                                                                                                                                                                                                                     | 47-13-14.9.c.1.A. | Be based on detailed geologic data collected to characterize the injection zone(s), confining zone(s) and any additional zones; and anticipated operating data, including injection pressures, rates, and total volumes over the proposed life of the geologic sequestration project;                                                                                                                                                                                                                                                     | Same. |
| 40 CFR 146.84(c)(1)(ii)  | Take into account any geologic heterogeneities, other discontinuities, data quality, and their possible impact on model predictions; and                                                                                                                                                                                                                                                                                                                                                                                                  | 47-13-14.9.c.1.B. | Take into account any geologic heterogeneities, other discontinuities, data quality, and their possible impact on model predictions; and                                                                                                                                                                                                                                                                                                                                                                                                  | Same. |
| 40 CFR 146.84(c)(1)(iii) | Consider potential migration through faults, fractures, and artificial penetrations.                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 47-13-14.9.c.1.C. | Consider potential migration through faults, fractures, and artificial penetrations.                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Same. |

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| 40 CFR 146.84(c)(2) | Using methods approved by the Director, identify all penetrations, including active and abandoned wells and underground mines, in the area of review that may penetrate the confining zone(s). Provide a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require; and | 47-13-14.9.c.2. | Using methods approved by the Director, identify all penetrations, including active and abandoned wells and underground mines, in the area of review that may penetrate the confining zone(s). Provide a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require; and | Same. |
| 40 CFR 146.84(c)(3) | Determine which abandoned wells in the area of review have been plugged in a manner that prevents the movement of carbon dioxide or other fluids that may endanger USDWs, including use of materials compatible with the carbon dioxide stream.                                                                                                                                           | 47-13-14.9.c.3. | Determine which abandoned wells in the area of review have been plugged in a manner that prevents the movement of carbon dioxide or other fluids that may endanger USDWs, including use of materials compatible with the carbon dioxide stream.                                                                                                                                           | Same. |
| 40 CFR 146.84(d)    | Owners or operators of Class VI wells must perform corrective action on all wells in the area of review that are determined to need corrective action, using methods designed to prevent the movement of fluid into or between USDWs, including use of materials compatible with the carbon dioxide stream, where appropriate.                                                            | 47-13-14.9.d.   | Owners or operators of Class 6 wells must perform corrective action on all wells in the area of review that are determined to need corrective action, using methods designed to prevent the movement of fluid into or between USDWs, including use of materials compatible with the carbon dioxide stream, where appropriate.                                                             | Same. |
| 40 CFR 146.84(e)    | At the minimum fixed frequency, not to exceed five years, as specified in the area of review and corrective action plan, or when monitoring and operational conditions warrant, owners or operators must:                                                                                                                                                                                 | 47-13-14.9.e.   | At the minimum fixed frequency, not to exceed five years, as specified in the area of review and corrective action plan, or when monitoring and operational conditions warrant, owners or operators must:                                                                                                                                                                                 | Same. |
| 40 CFR 146.84(e)(1) | Reevaluate the area of review in the same manner specified in paragraph (c)(1) of this section;                                                                                                                                                                                                                                                                                           | 47-13-14.9.e.1. | Reevaluate the area of review in the same manner specified in 14.9.c.1. of this section;                                                                                                                                                                                                                                                                                                  | Same. |

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| 40 CFR 146.84(e)(2) | Identify all wells in the reevaluated area of review that require corrective action in the same manner specified in paragraph (c) of this section;                                                                                                                                                                                                                                                                                                                | 47-13-14.9.e.2. | Identify all wells in the reevaluated area of review that require corrective action in the same manner specified in 14.9.c. of this section;                                                                                                                                                                                                                                                                                                                      | Same. |
| 40 CFR 146.84(e)(3) | Perform corrective action on wells requiring corrective action in the reevaluated area of review in the same manner specified in paragraph (d) of this section; and                                                                                                                                                                                                                                                                                               | 47-13-14.9.e.3. | Perform corrective action on wells requiring corrective action in the reevaluated area of review in the same manner specified in 14.9.d. of this section; and                                                                                                                                                                                                                                                                                                     | Same. |
| 40 CFR 146.84(e)(4) | Submit an amended area of review and corrective action plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the area of review and corrective action plan is needed. Any amendments to the area of review and corrective action plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at 40 CFR 144.39 or 144.41, as appropriate. | 47-13-14.9.e.4. | Submit an amended area of review and corrective action plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the area of review and corrective action plan is needed. Any amendments to the area of review and corrective action plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at sections 14.18 or 14.20, as appropriate. | Same. |
| 40 CFR 146.84(f)    | The emergency and remedial response plan (as required by 40 CFR 146.94) and the demonstration of financial responsibility (as described by 40 CFR 146.85) must account for the area of review delineated as specified in paragraph (c)(1) of this section or the most recently evaluated area of review delineated under paragraph (e) of this section, regardless of whether or not corrective action in the area of review is phased.                           | 47-13-14.9.f.   | The emergency and remedial response plan (as required by section 13.7.) and the demonstration of financial responsibility (as described by 14.7.g.) must account for the area of review delineated as specified in 14.9.c.1. of this section or the most recently evaluated area of review delineated under 14.9.e of this section, regardless of whether or not corrective action in the area of review is phased.                                               | Same. |
| 40 CFR 146.84(g)    | All modeling inputs and data used to support area of review reevaluations under paragraph (e) of this section shall be retained for 10 years.                                                                                                                                                                                                                                                                                                                     | 47-13-14.9.g.   | All modeling inputs and data used to support area of review reevaluations under 14.9.e of this section shall be retained for 10 years.                                                                                                                                                                                                                                                                                                                            | Same. |

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| 40 CFR 146.85(a)         | <b>40 CFR 146.85 Financial responsibility.</b><br><br>The owner or operator must demonstrate and maintain financial responsibility as determined by the Director that meets the following conditions: | 47-13-14.7.g.   | Financial responsibility. The permit shall require the permittee, including the transferor of a permit, to demonstrate and maintain financial responsibility and resources to close, plug, and abandon underground injection wells in a manner prescribed by the Director until: the well has been plugged and abandoned and the report submitted; or the well has been converted; or the transferor of the permit receives notice that the transferee has demonstrated financial responsibility. For Class 6 permits the following provisions also apply: | The introductory text implies that financial responsibility must be maintained only until the well is plugged, rather than until site closure is authorized (it is unclear if this text refers to all wells or is specific to Class VI). Clarification of the applicability of 47-13-14.7.g is recommended.<br><br>Note that 14.7.g.14.A.ii requires financial responsibility for Class VI wells be maintained until the director authorizes site closure (see below). The rule is also clear that following requirements apply to Class VI wells. |
| 40 CFR 146.85(a)(1)      | The financial responsibility instrument(s) used must be from the following list of qualifying instruments:                                                                                            | 47-13-14.7.g.1. | The permittee must show evidence of financial responsibility to the Director by submission of a surety bond, trust fund, insurance, irrevocable standby letter of credit, escrow account, or other adequate assurance, such as a financial statement or other material acceptable to the Director.                                                                                                                                                                                                                                                         | Similar to the instruments listed at 146.85(a)(1)(i)-(vii), except for letter of credit.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 40 CFR 146.85(a)(1)(i)   | Trust Funds                                                                                                                                                                                           | 47-13-14.7.g.1  | See 47-13-14.7.g.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | This is among the instruments listed in 47-13-14.7.g.1. No concerns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 40 CFR 146.85(a)(1)(ii)  | Surety Bonds                                                                                                                                                                                          | 47-13-14.7.g.1  | See 47-13-14.7.g.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | This is among the instruments listed in 47-13-14.7.g.1. No concerns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 40 CFR 146.85(a)(1)(iii) | Letter of Credit                                                                                                                                                                                      | 47-13-14.7.g.1  | See 47-13-14.7.g.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 47-13-14.7.g.1 refers to an “irrevocable standby letter of credit” which we believe is equivalent to a letter of credit.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 40 CFR 146.85(a)(1)(iv)  | Insurance                                                                                                                                                                                             | 47-13-14.7.g.1  | See 47-13-14.7.g.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | This is among the instruments listed in 47-13-14.7.g.1. No concerns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 40 CFR 146.85(a)(1)(v)   | Self Insurance (i.e., Financial Test and Corporate Guarantee)                                                                                                                                         | 47-13-14.7.g.1  | See 47-13-14.7.g.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | This is among the instruments listed in 47-13-14.7.g.1. No concerns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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| 40 CFR 146.85(a)(1)(vi)  | Escrow Account                                                                                                                  | 47-13-14.7.g.1    | See 47-13-14.7.g.1.                                                                                                             | This is among the instruments listed in 47-13-14.7.g.1. No concerns.       |
| 40 CFR 146.85(a)(1)(vii) | Any other instrument(s) satisfactory to the Director                                                                            | 47-13-14.7.g.1    | See 47-13-14.7.g.1.                                                                                                             | This is among the instruments listed in 47-13-14.7.g.1. No concerns.       |
| 40 CFR 146.85(a)(2)      | The qualifying instrument(s) must be sufficient to cover the cost of:                                                           | 47-13-14.7.g.2.   | The qualifying instrument(s) must be sufficient to cover the cost of:                                                           | Same.                                                                      |
| 40 CFR 146.85(a)(2)(i)   | Corrective action (that meets the requirements of 40 CFR 146.84);                                                               | 47-13-14.7.g.2.A. | Corrective action (that meets the requirements of section 6.1);                                                                 | Same. Section 14.9 is a better match to 146.84 than 6.1; suggest revision. |
| 40 CFR 146.85(a)(2)(ii)  | Injection well plugging (that meets the requirements of 40 CFR 146.92);                                                         | 47-13-14.7.g.2.B. | Injection well plugging (that meets the requirements of sections 8.3, and 13.4);                                                | Same. Suggest revision to only reference 13.4 for Class VI wells.          |
| 40 CFR 146.85(a)(2)(iii) | Post injection site care and site closure (that meets the requirements of 40 CFR 146.93); and                                   | 47-13-14.7.g.2.C. | Post injection site care and site closure (that meets the requirements of 13.9); and                                            | Same.                                                                      |
| 40 CFR 146.85(a)(2)(iv)  | Emergency and remedial response (that meets the requirements of 40 CFR 146.94).                                                 | 47-13-14.7.g.2.D. | Emergency and remedial response (that meets the requirements of 13.7.).                                                         | Same.                                                                      |
| 40 CFR 146.85(a)(3)      | The financial responsibility instrument(s) must be sufficient to address endangerment of underground sources of drinking water. | 47-13-14.7.g.3.   | The financial responsibility instrument(s) must be sufficient to address endangerment of underground sources of drinking water. | Same.                                                                      |
| 40 CFR 146.85(a)(4)      | The qualifying financial responsibility instrument(s) must comprise protective conditions of coverage.                          | 47-13-14.7.g.4.   | The qualifying financial responsibility instrument(s) must comprise protective conditions of coverage.                          | Same.                                                                      |

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| 40 CFR 146.85(a)(4)(i)    | Protective conditions of coverage must include at a minimum cancellation, renewal, and continuation provisions, specifications on when the provider becomes liable following a notice of cancellation if there is a failure to renew with a new qualifying financial instrument, and requirements for the provider to meet a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 47-13-14.7.g.4.A. | Protective conditions of coverage must include at a minimum cancellation, renewal, and continuation provisions, specifications on when the provider becomes liable following a notice of cancellation if there is a failure to renew with a new qualifying financial instrument, and requirements for the provider to meet a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Same. |
| 40 CFR 146.85(a)(4)(i)(A) | Cancellation – for purposes of this part, an owner or operator must provide that their financial mechanism may not cancel, terminate or fail to renew except for failure to pay such financial instrument. If there is a failure to pay the financial instrument, the financial institution may elect to cancel, terminate, or fail to renew the instrument by sending notice by certified mail to the owner or operator and the Director. The cancellation must not be final for 120 days after receipt of cancellation notice. The owner or operator must provide an alternate financial responsibility demonstration within 60 days of notice of cancellation, and if an alternate financial responsibility demonstration is not acceptable (or possible), any funds from the instrument being cancelled must be released within 60 days of notification by the Director. | 47-13-14.7.g.5.   | Cancellation - for purposes of this part, an owner or operator must provide that their financial mechanism may not cancel, terminate or fail to renew except for failure to pay such financial instrument. If there is a failure to pay the financial instrument, the financial institution may elect to cancel, terminate, or fail to renew the instrument by sending notice by certified mail to the owner or operator and the Director. The cancellation must not be final for 120 days after receipt of cancellation notice. The owner or operator must provide an alternate financial responsibility demonstration within 60 days of notice of cancellation, and if an alternate financial responsibility demonstration is not acceptable (or possible), any funds from the instrument being cancelled must be released within 60 days of notification by the Director | Same. |

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| 40 CFR 146.85(a)(4)(i)(B) | Renewal – for purposes of this part, owners or operators must renew all financial instruments, if an instrument expires, for the entire term of the geologic sequestration project. The instrument may be automatically renewed as long as the owner or operator has the option of renewal at the face amount of the expiring instrument. The automatic renewal of the instrument must, at a minimum, provide the holder with the option of renewal at the face amount of the expiring financial instrument.                                                        | 47-13-14.7.g.6.   | Renewal - for purposes of this part, owners or operators must renew all financial instruments, if an instrument expires, for the entire term of the geologic sequestration project. The instrument may be automatically renewed as long as the owner or operator has the option of renewal at the face amount of the expiring instrument. The automatic renewal of the instrument must, at a minimum, provide the holder with the option of renewal at the face amount of the expiring financial instrument.                                                        | Same. |
| 40 CFR 146.85(a)(4)(i)(C) | Cancellation, termination, or failure to renew may not occur and the financial instrument will remain in full force and effect in the event that on or before the date of expiration: the Director deems the facility abandoned; or the permit is terminated or revoked or a new permit is denied; or closure is ordered by the Director or a U.S. district court or other court of competent jurisdiction; or the owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or the amount due is paid. | 47-13-14.7.g.7.   | Cancellation, termination, or failure to renew may not occur and the financial instrument will remain in full force and effect in the event that on or before the date of expiration: The Director deems the facility abandoned; or the permit is terminated or revoked or a new permit is denied; or closure is ordered by the Director or a U.S. district court or other court of competent jurisdiction; or the owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or the amount due is paid. | Same. |
| 40 CFR 146.85(a)(5)       | The qualifying financial responsibility instrument(s) must be approved by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 47-13-14.7.g.8.   | The qualifying financial responsibility instrument(s) must be approved by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Same. |
| 40 CFR 146.85(a)(5)(i)    | The Director shall consider and approve the financial responsibility demonstration for all the phases of the geologic sequestration project prior to issue a Class VI permit (40 CFR 146.82).                                                                                                                                                                                                                                                                                                                                                                       | 47-13-14.7.g.8.A. | The Director shall consider and approve the financial responsibility demonstration for all the phases of the geologic sequestration project prior to issue a Class 6 permit (13.8).                                                                                                                                                                                                                                                                                                                                                                                 | Same. |

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| 40 CFR 146.85(a)(5)(ii)  | The owner or operator must provide any updated information related to their financial responsibility instrument(s) on an annual basis and if there are any changes, the Director must evaluate, within a reasonable time, the financial responsibility demonstration to confirm that the instrument(s) used remain adequate for use. The owner or operator must maintain financial responsibility requirements regardless of the status of the Director's review of the financial responsibility demonstration.                                                                                                              | 47-13-14.7.g.8.B. | The owner or operator must provide any updated information related to their financial responsibility instrument(s) on an annual basis and if there are any changes, the Director must evaluate, within a reasonable time, the financial responsibility demonstration to confirm that the instrument(s) used remain adequate for use. The owner or operator must maintain financial responsibility requirements regardless of the status of the Director's review of the financial responsibility demonstration.                                                                                                              | Same. |
| 40 CFR 146.85(a)(5)(iii) | The Director may disapprove the use of a financial instrument if he determines that it is not sufficient to meet the requirements of this section.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 47-13-14.7.g.8.C. | The Director may disapprove the use of a financial instrument if he determines that it is not sufficient to meet the requirements of this section                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Same. |
| 40 CFR 146.85(a)(6)      | The owner or operator may demonstrate financial responsibility by using one or multiple qualifying financial instruments for specific phases of the geologic sequestration project.                                                                                                                                                                                                                                                                                                                                                                                                                                          | 47-13-14.7.g.9.   | The owner or operator may demonstrate financial responsibility by using one or multiple qualifying financial instruments for specific phases of the geologic sequestration project.                                                                                                                                                                                                                                                                                                                                                                                                                                          | Same. |
| 40 CFR 146.85(a)(6)(i)   | In the event that the owner or operator combines more than one instrument for a specific geologic sequestration phase (e.g., well plugging), such combination must be limited to instruments that are not based on financial strength or performance (i.e., self insurance or performance bond), for example trust funds, surety bonds guaranteeing payment into a trust fund, letters of credit, escrow account, and insurance. In this case, it is the combination of mechanisms, rather than the single mechanism, which must provide financial responsibility for an amount at least equal to the current cost estimate. | 47-13-14.7.g.9.A. | In the event that the owner or operator combines more than one instrument for a specific geologic sequestration phase (e.g., well plugging), such combination must be limited to instruments that are not based on financial strength or performance (i.e., self insurance or performance bond), for example trust funds, surety bonds guaranteeing payment into a trust fund, letters of credit, escrow account, and insurance. In this case, it is the combination of mechanisms, rather than the single mechanism, which must provide financial responsibility for an amount at least equal to the current cost estimate. | Same. |

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| 40 CFR<br>146.85(a)(6)(ii)  | When using a third-party instrument to demonstrate financial responsibility, the owner or operator must provide a proof that the third-party providers either have passed financial strength requirements based on credit ratings; or has met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.                                                                                 | 47-13-14.7.g.10.   | When using a third-party instrument to demonstrate financial responsibility, the owner or operator must provide a proof that the third-party providers either have passed financial strength requirements based on credit ratings; or have met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.                                                                                                                            | Same.                                                                                                                                                                                                          |
| 40 CFR<br>146.85(a)(6)(iii) | An owner or operator using certain types of third party instruments must establish a standby trust to enable EPA to be party to the financial responsibility agreement without EPA being the beneficiary of any funds. The standby trust fund must be used along with other financial responsibility instruments (e.g., surety bonds, letters of credit, or escrow accounts) to provide a location to place funds if needed. | 47-13-14.7.g.10.A. | An owner or operator using certain types of third-party instruments must establish a standby trust to enable the Department and/or EPA to be party to the financial responsibility agreement without the Department and/or EPA being the beneficiary of any funds. The standby trust fund must be used along with other financial responsibility instruments (e.g., surety bonds, letters of credit, or escrow accounts) to provide a location to place funds if needed. | Similar; WV Rules refer to the “Department and/or EPA to be party to the financial responsibility agreement without the Department and/or EPA being the beneficiary of any funds.” No concerns for stringency. |
| 40 CFR<br>146.85(a)(6)(iv)  | An owner or operator may deposit money to an escrow account to cover financial responsibility requirements; this account must segregate funds sufficient to cover estimated costs for Class VI (geologic sequestration) financial responsibility from other accounts and uses.                                                                                                                                               | 47-13-14.7.g.11.   | An owner or operator may deposit money to an escrow account to cover financial responsibility requirements; this account must segregate funds sufficient to cover estimated costs for Class 6 (geologic sequestration) financial responsibility from other accounts and uses.                                                                                                                                                                                            | Same.                                                                                                                                                                                                          |

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| 40 CFR<br>146.85(a)(<br>6)(v) | An owner or operator or its guarantor may use self insurance to demonstrate financial responsibility for geologic sequestration projects. In order to satisfy this requirement the owner or operator must meet a Tangible Net Worth of an amount approved by the Director, have a Net working capital and tangible net worth each at least six times the sum of the current well plugging, post injection site care and site closure cost, have assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the current well plugging, post injection site care and site closure cost, and must submit a report of its bond rating and financial information annually. In addition the owner or operator must either: have a bond rating test of AAA, AA, A, or BBB as issued by Standard & Poor's or Aaa, Aa, A, or Baa as issued by Moody's; or meet all of the following five financial ratio thresholds: a ratio of total liabilities to net worth less than 2.0; a ratio of current assets to current liabilities greater than 1.5; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; a ratio of current assets minus current liabilities to total assets greater than -0.1; and a net profit (revenues minus expenses) greater than 0. | 47-13-<br>14.7.g.12. | An owner or operator or its guarantor may use self-insurance to demonstrate financial responsibility for geologic sequestration projects. In order to satisfy this requirement the owner or operator must meet a Tangible Net Worth of an amount approved by the Director, have a Net working capital and tangible net worth each at least six times the sum of the current well plugging, post injection site care and site closure cost, have assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the current well plugging, post injection site care and site closure cost, and must submit a report of its bond rating and financial information annually. In addition the owner or operator must either: Have a bond rating test of AAA, AA, A, or BBB as issued by Standard & Poor's or Aaa, Aa, A, or Baa as issued by Moody's; or meet all of the following five financial ratio thresholds: A ratio of total liabilities to net worth less than 2.0; a ratio of current assets to current liabilities greater than 1.5; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; A ratio of current assets minus current liabilities to total assets greater than -0.1; and a net profit (revenues minus expenses) greater than 0. | Same. |
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| 40 CFR 146.85(a)(6)(vi)  | An owner or operator who is not able to meet corporate financial test criteria may arrange a corporate guarantee by demonstrating that its corporate parent meets the financial test requirements on its behalf. The parent's demonstration that it meets the financial test requirement is insufficient if it has not also guaranteed to fulfill the obligations for the owner or operator. | 47-13-14.7.g.12.A.    | An owner or operator who is not able to meet corporate financial test criteria may arrange a corporate guarantee by demonstrating that its corporate parent meets the financial test requirements on its behalf. The parent's demonstration that it meets the financial test requirement is insufficient if it has not also guaranteed to fulfill the obligations for the owner or operator. | Same. |
| 40 CFR 146.85(a)(6)(vii) | An owner or operator may obtain an insurance policy to cover the estimated costs of geologic sequestration activities requiring financial responsibility. This insurance policy must be obtained from a third party provider.                                                                                                                                                                | 47-13-14.7.g.13.      | An owner or operator may obtain an insurance policy to cover the estimated costs of geologic sequestration activities requiring financial responsibility. This insurance policy must be obtained from a third-party provider.                                                                                                                                                                | Same. |
| 40 CFR 146.85(b)         | The requirement to maintain adequate financial responsibility and resources is directly enforceable regardless of whether the requirement is a condition of the permit.                                                                                                                                                                                                                      | 47-13-14.7.g.14.      | The requirement to maintain adequate financial responsibility and resources is directly enforceable regardless of whether the requirement is a condition of the permit.                                                                                                                                                                                                                      | Same. |
| 40 CFR 146.85(b)(1)      | The owner or operator must maintain financial responsibility and resources until:                                                                                                                                                                                                                                                                                                            | 47-13-14.7.g.14.A.    | The owner or operator must maintain financial responsibility and resources until:                                                                                                                                                                                                                                                                                                            | Same. |
| 40 CFR 146.85(b)(1)(i)   | The Director receives and approves the completed post-injection site care and site closure plan; and                                                                                                                                                                                                                                                                                         | 47-13-14.7.g.14.A.i.  | The Director receives and approves the completed post-injection site care and site closure plan; and                                                                                                                                                                                                                                                                                         | Same. |
| 40 CFR 146.85(b)(1)(ii)  | The Director approves site closure.                                                                                                                                                                                                                                                                                                                                                          | 47-13-14.7.g.14.A.ii. | The Director approves site closure.                                                                                                                                                                                                                                                                                                                                                          | Same. |
| 40 CFR 146.85(b)(2)      | The owner or operator may be released from a financial instrument in the following circumstances:                                                                                                                                                                                                                                                                                            | 47-13-14.7.g.14.B.    | The owner or operator may be released from a financial instrument in the following circumstances:                                                                                                                                                                                                                                                                                            | Same. |

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| 40 CFR 146.85(b)(2)(i)  | The owner or operator has completed the phase of the geologic sequestration project for which the financial instrument was required and has fulfilled all its financial obligations as determined by the Director, including obtaining financial responsibility for the next phase of the GS project, if required; or | 47-13-14.7.g.14.B.i.  | The owner or operator has completed the phase of the geologic sequestration project for which the financial instrument was required and has fulfilled all its financial obligations as determined by the Director, including obtaining financial responsibility for the next phase of the GS project, if required; or | Same. |
| 40 CFR 146.85(b)(2)(ii) | The owner or operator has submitted a replacement financial instrument and received written approval from the Director accepting the new financial instrument and releasing the owner or operator from the previous financial instrument.                                                                             | 47-13-14.7.g.14.B.ii. | The owner or operator has submitted a replacement financial instrument and received written approval from the Director accepting the new financial instrument and releasing the owner or operator from the previous financial instrument.                                                                             | Same. |
| 40 CFR 146.85(c)        | The owner or operator must have a detailed written estimate, in current dollars, of the cost of performing corrective action on wells in the area of review, plugging the injection well(s), post-injection site care and site closure, and emergency and remedial response.                                          | 47-13-14.7.g.15.      | The owner or operator must have a detailed written estimate, in current dollars, of the cost of performing corrective action on wells in the area of review, plugging the injection well(s), post-injection site care and site closure, and emergency and remedial response.                                          | Same. |
| 40 CFR 146.85(c)(1)     | The cost estimate must be performed for each phase separately and must be based on the costs to the regulatory agency of hiring a third party to perform the required activities. A third party is a party who is not within the corporate structure of the owner or operator.                                        | 47-13-14.7.g.15.A.    | The cost estimate must be performed for each phase separately and must be based on the costs to the regulatory agency of hiring a third party to perform the required activities. A third party is a party who is not within the corporate structure of the owner or operator.                                        | Same. |

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| 40 CFR 146.85(c)(2) | During the active life of the geologic sequestration project, the owner or operator must adjust the cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with paragraph (a) of this section and provide this adjustment to the Director. The owner or operator must also provide to the Director written updates of adjustments to the cost estimate within 60 days of any amendments to the area of review and corrective action plan (40 CFR 146.84), the injection well plugging plan (146.92), the post-injection site care and site closure plan (40 CFR 146.93), and the emergency and remedial response plan (40 CFR 146.94).                                                                                                                                                                        | 47-13-14.7.g.15.B. | During the active life of the geologic sequestration project, the owner or operator must adjust the cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with paragraph (a) of this section and provide this adjustment to the Director. The owner or operator must also provide to the Director written updates of adjustments to the cost estimate within 60 days of any amendments to the area of review and corrective action plan (6.1), the injection well plugging plan (13.4), the post-injection site care and site closure plan (13.9), and the emergency and remedial response plan (13.7).                                                                                                                                                            | Same. |
| 40 CFR 146.85(c)(3) | The Director must approve any decrease or increase to the initial cost estimate. During the active life of the geologic sequestration project, the owner or operator must revise the cost estimate no later than 60 days after the Director has approved the request to modify the area of review and corrective action plan (40 CFR 146.84), the injection well plugging plan (40 CFR 146.92), the post-injection site care and site closure plan (40 CFR 146.93), and the emergency and response plan (40 CFR 146.94), if the change in the plan increases the cost. If the change to the plans decreases the cost, any withdrawal of funds must be approved by the Director. Any decrease to the value of the financial assurance instrument must first be approved by the Director. The revised cost estimate must be adjusted for inflation as specified at paragraph (c)(2) of this section. | 47-13-14.7.g.15.C. | The Director must approve any decrease or increase to the initial cost estimate. During the active life of the geologic sequestration project, the owner or operator must revise the cost estimate no later than 60 days after the Director has approved the request to modify the area of review and corrective action plan (6.1), the injection well plugging plan (13.4), the post-injection site care and site closure plan (13.9), and the emergency and response plan (13.7), if the change in the plan increases the cost. If the change to the plans decreases the cost, any withdrawal of funds must be approved by the Director. Any decrease to the value of the financial assurance instrument must first be approved by the Director. The revised cost estimate must be adjusted for inflation as specified at 14.7.g.15.B of this section. | Same. |

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| 40 CFR 146.85(c)(4) | Whenever the current cost estimate increases to an amount greater than the face amount of a financial instrument currently in use, the owner or operator, within 60 days after the increase, must either cause the face amount to be increased to an amount at least equal to the current cost estimate and submit evidence of such increase to the Director, or obtain other financial responsibility instruments to cover the increase. Whenever the current cost estimate decreases, the face amount of the financial assurance instrument may be reduced to the amount of the current cost estimate only after the owner or operator has received written approval from the Director. | 47-13-14.7.g.15.D. | Whenever the current cost estimate increases to an amount greater than the face amount of a financial instrument currently in use, the owner or operator, within 60 days after the increase, must either cause the face amount to be increased to an amount at least equal to the current cost estimate and submit evidence of such increase to the Director, or obtain other financial responsibility instruments to cover the increase. Whenever the current cost estimate decreases, the face amount of the financial assurance instrument may be reduced to the amount of the current cost estimate only after the owner or operator has received written approval from the Director. | Same. |
| 40 CFR 146.85(d)    | The owner or operator must notify the Director by certified mail of adverse financial conditions such as bankruptcy that may affect the ability to carry out injection well plugging and post-injection site care and site closure.                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 47-13-14.7.g.16.   | The owner or operator must notify the Director by certified mail of adverse financial conditions such as bankruptcy that may affect the ability to carry out injection well plugging and post-injection site care and site closure.                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Same. |
| 40 CFR 146.85(d)(1) | In the event that the owner or operator or the third party provider of a financial responsibility instrument is going through a bankruptcy, the owner or operator must notify the Director by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 days after commencement of the proceeding.                                                                                                                                                                                                                                                                            | 47-13-14.7.g.16.A. | In the event that the owner or operator or the third party provider of a financial responsibility instrument is going through a bankruptcy, the owner or operator must notify the Director by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 days after commencement of the proceeding.                                                                                                                                                                                                                                                                            | Same. |
| 40 CFR 146.85(d)(2) | A guarantor of a corporate guarantee must make such a notification to the Director if he/she is named as debtor, as required under the terms of the corporate guarantee.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 47-13-14.7.g.16.B. | A guarantor of a corporate guarantee must make such a notification to the Director if he/she is named as debtor, as required under the terms of the corporate guarantee.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Same. |

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| 40 CFR 146.85(d)(3) | An owner or operator who fulfills the requirements of paragraph (a) of this section by obtaining a trust fund, surety bond, letter of credit, escrow account, or insurance policy will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee of the institution issuing the trust fund, surety bond, letter of credit, escrow account, or insurance policy. The owner or operator must establish other financial assurance within 60 days after such an event. | 47-13-14.7.g.16.C. | An owner or operator who fulfills the requirements of 14.7.g. of this section by obtaining a trust fund, surety bond, letter of credit, escrow account, or insurance policy will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee of the institution issuing the trust fund, surety bond, letter of credit, escrow account, or insurance policy. The owner or operator must establish other financial assurance within 60 days after such an event. | Same.<br><br>Note there is an extra space in the word “The” in the last sentence.                                                                 |
| 40 CFR 146.85(e)    | The owner or operator must provide an adjustment of the cost estimate to the Director within 60 days of notification by the Director, if the Director determines during the annual evaluation of the qualifying financial responsibility instrument(s) that the most recent demonstration is no longer adequate to cover the cost of corrective action (as required by 40 CFR 146.84), injection well plugging (as required by 40 CFR 146.92), post-injection site care and site closure (as required by 40 CFR 146.93), and emergency and remedial response (as required by 40 CFR 146.94).                                    | 47-13-14.7.g.17.   | The owner or operator must provide an adjustment of the cost estimate to the Director within 60 days of notification by the Director, if the Director determines during the annual evaluation of the qualifying financial responsibility instrument(s) that the most recent demonstration is no longer adequate to cover the cost of corrective action (as required by section 6.1), injection well plugging (as required by section 13.4), post-injection site care and site closure (as required by section 13.9), and emergency and remedial response (as required by section 13.7).                                   | Same.                                                                                                                                             |
| 40 CFR 146.85(f)    | The Director must approve the use and length of pay-in-periods for trust funds or escrow accounts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 47-13-14.7.g.6.    | The Director must approve the use and length of pay-in-periods for trust funds or escrow accounts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Note that this citation appear to be out of order (i.e., 14.7.g.6 came after 14.7.g.17; perhaps it should be 14.7.g.18? Provision is same as CFR. |

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| 40 CFR 146.86(a)    | <b>40 CFR 146.86 Injection well construction requirements.</b><br><br><i>General.</i> The owner or operator must ensure that all Class VI wells are constructed and completed to: | 47-13-13.3.     | Construction Requirements. The Director shall prescribe requirements for the construction of Class 6 injection wells. Existing wells shall achieve compliance with such requirements according to a specific compliance schedule established by the Director as a condition of the permit. New wells shall be in compliance with construction requirements before injection operations begin. The owner or operator of a proposed injection well shall submit plans to the Director for testing, drilling, and construction and obtain the approval of the initial plans as a condition of the permit. The Director's approval of any modifications of the plan shall be obtained before incorporating them into the construction of the injection well. At a minimum, such requirements shall prescribe that:<br>13.3.a. Each Class 6 well is constructed and completed to: | West Virginia's rule includes some introductory text that appears to be requirements for the director and not the operator. However, it appears to require a permit for all Class VI wells. No concerns for stringency. |
| 40 CFR 146.86(a)(1) | Prevent the movement of fluids into or between USDWs or into any unauthorized zones;                                                                                              | 47-13-13.3.a.1. | Prevent the movement of fluids into or between USDW or into any unauthorized jones;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Similar; note typos: USDW should be plural, and "unauthorized jones"                                                                                                                                                    |
| 40 CFR 146.86(a)(2) | Permit the use of appropriate testing devices and workover tools; and                                                                                                             | 47-13-13.3.a.2. | Permit the use of appropriate testing devices and workover tools; and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Same.                                                                                                                                                                                                                   |
| 40 CFR 146.86(a)(3) | Permit continuous monitoring of the annulus space between the injection tubing and long string casing.                                                                            | 47-13-13.3.a.3. | Permit continuous monitoring of the annulus space between the injection tubing and long string casing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Same.                                                                                                                                                                                                                   |
| 40 CFR 146.86(b)    | <i>Casing and Cementing of Class VI Wells.</i>                                                                                                                                    | 47-13-13.3.b.   | Casing and cementing of Class 6 wells.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Same.                                                                                                                                                                                                                   |

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| <p>40 CFR 146.86(b)(1)</p> | <p>Casing and cement or other materials used in the construction of each Class VI well must have sufficient structural strength and be designed for the life of the geologic sequestration project. All well materials must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director. The casing and cementing program must be designed to prevent the movement of fluids into or between USDWs. In order to allow the Director to determine and specify casing and cementing requirements, the owner or operator must provide the following information:</p> | <p>47-13-13.3.b.1.</p> | <p>[ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] and cement or other materials used in the construction of each Class 6 [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=fc19200126cc5955e16ed671ee5847e9&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] must have sufficient structural strength and be designed for the life of the [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=5fb9be1696623392056429b75e7de7e4&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ]. All [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=fc19200126cc5955e16ed671ee5847e9&amp;term_occur=999&amp;term_src=Title:40:C</p> | <p>Same.</p> |
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\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

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|  |  |  | <p>hapter:I:Subchapter:D:Part:146:Sub part:H:146.86" ] materials must be compatible with [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Sub part:H:146.86" ] with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Sub part:H:146.86" ]. The [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Sub part:H:146.86" ] and [ HYPERLINK</p> |  |
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\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.



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|  |  |  | <p>"<a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=b55917579b9ca974355628335d566e3f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=b55917579b9ca974355628335d566e3f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86</a>" ] program must be designed to prevent the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=53539c980a463e8be88bcb94e543a776&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=53539c980a463e8be88bcb94e543a776&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] of [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] into or between USDWs. In order to allow the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] to determine and</p> |  |
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\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

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|                         |                                                                              |                   | <p>specify [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK</a><br/> <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] and [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=b55917579b9ca974355628335d566e3f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK</a><br/> <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=b55917579b9ca974355628335d566e3f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=b55917579b9ca974355628335d566e3f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] requirements, the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK</a><br/> <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] must provide the following information:</p> |       |
| 40 CFR 146.86(b)(1)(i)  | Depth to the injection zone(s);                                              | 47-13-13.3.b.1.A. | Depth to the injection zone(s);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Same. |
| 40 CFR 146.86(b)(1)(ii) | Injection pressure, external pressure, internal pressure, and axial loading; | 47-13-13.3.b.1.B. | Injection pressure, external pressure, internal pressure, and axial loading;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Same. |

\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

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| 40 CFR 146.86(b)(1)(iii)  | Hole size;                                                                                                                                        | 47-13-13.3.b.1.C. | Hole size;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Same. |
| 40 CFR 146.86(b)(1)(iv)   | Size and grade of all casing strings (wall thickness, external diameter, nominal weight, length, joint specification, and construction material); | 47-13-13.3.b.1.D. | Size and grade of all casing strings (wall thickness, external diameter, nominal weight, length, joint specification, and construction material);                                                                                                                                                                                                                                                                                                                                                                                                       | Same. |
| 40 CFR 146.86(b)(1)(v)    | Corrosiveness of the carbon dioxide stream and formation fluids;                                                                                  | 47-13-13.3.b.1.E. | Corrosiveness of the carbon dioxide stream and formation fluids;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Same. |
| 40 CFR 146.86(b)(1)(vi)   | Down-hole temperatures;                                                                                                                           | 47-13-13.3.b.1.F. | Down-hole temperatures;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Same. |
| 40 CFR 146.86(b)(1)(vii)  | Lithology of injection and confining zone(s);                                                                                                     | 47-13-13.3.b.1.G. | Lithology of injection and confining zone(s);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Same. |
| 40 CFR 146.86(b)(1)(viii) | Type or grade of cement and cement additives; and                                                                                                 | 47-13-13.3.b.1.H. | Type or grade of cement and cement additives; and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Same. |
| 40 CFR 146.86(b)(1)(ix)   | Quantity, chemical composition, and temperature of the carbon dioxide stream.                                                                     | 47-13-13.3.b.1.I. | Quantity, chemical composition, and temperature of the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=27ac8590975cb5c2bea63d4b396f8c5f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=27ac8590975cb5c2bea63d4b396f8c5f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ]. | Same. |

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| 40 CFR<br>146.86(b)(<br>2) | Surface casing must extend through the base of the lowermost USDW and be cemented to the surface through the use of a single or multiple strings of casing and cement. | 47-13-13.3.b.2. | [ HYPERLINK<br>"https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=383bd9eb968a3b3b8624814de9e5f3f5&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] must extend through the base of the lowermost [ HYPERLINK<br>"https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=f57cf679e499feb7dac98dfc59238f26&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] and be [ HYPERLINK<br>"https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=b55917579b9ca974355628335d566e3f&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] to the surface through the use of a single or multiple strings of [ HYPERLINK<br>"https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=4982613686b5407853d3f3244bbd1040&te | Same. |
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|                     |                                                                                                                                                                                                |                 | rm_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] and cement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |
| 40 CFR 146.86(b)(3) | At least one long string casing, using a sufficient number of centralizers, must extend to the injection zone and must be cemented by circulating cement to the surface in one or more stages. | 47-13-13.3.b.3. | At least one long string [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ], using a sufficient number of centralizers, must extend to the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=3ab706e843abbeaf29fc3d1c7975889b&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=3ab706e843abbeaf29fc3d1c7975889b&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] and must be [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=b55917579b9ca974355628335d566e3f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=b55917579b9ca974355628335d566e3f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] by circulating cement to the surface in one or more stages. | Same. |

\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

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| 40 CFR 146.86(b)(4) | Circulation of cement may be accomplished by staging. The Director may approve an alternative method of cementing in cases where the cement cannot be recirculated to the surface, provided the owner or operator can demonstrate by using logs that the cement does not allow fluid movement behind the well bore. | 47-13-13.3.b.4. | Circulation of cement may be accomplished by staging. The [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=8e845d3a1c20c5c794a0df5b8969c1ca&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] may approve an alternative method of [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=b55917579b9ca974355628335d566e3f&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] in [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=4982613686b5407853d3f3244bbd1040&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] where the cement cannot be recirculated to the surface, provided the [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=6542131c028f2509274a321338894e93&term_occur=999&term_src=Title:40:C | Same. |
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|  |  |  | <p>hapter:I:Subchapter:D:Part:146:Sub part:H:146.86" ] can demonstrate by using logs that the cement does not allow [ HYPERLINK</p> <p>"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Sub part:H:146.86" ] [ HYPERLINK</p> <p>"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=53539c980a463e8be88bcb94e543a776&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Sub part:H:146.86" ] behind the [ HYPERLINK</p> <p>"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=fc19200126cc5955e16cd671ee5847e9&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Sub part:H:146.86" ] bore.</p> |  |
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| 40 CFR<br>146.86(b)(5) | Cement and cement additives must be compatible with the carbon dioxide stream and formation fluids and of sufficient quality and quantity to maintain integrity over the design life of the geologic sequestration project. The integrity and location of the cement shall be verified using technology capable of evaluating cement quality radially and identifying the location of channels to ensure that USDWs are not endangered. | 47-13-13.3.b.5. | Cement and cement additives must be compatible with the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=27ac8590975cb5c2bea63d4b396f8c5f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=27ac8590975cb5c2bea63d4b396f8c5f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] and [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=2945ce9a203d84b02648b53f7a688a27&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=2945ce9a203d84b02648b53f7a688a27&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] and of sufficient quality and quantity to maintain integrity over the design life of the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=5fb9be1696623392056429b75e7de7e4&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=5fb9be1696623392056429b75e7de7e4&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ]. The integrity and location of the cement shall be verified using technology capable of evaluating cement quality radially and identifying the location of channels to ensure that [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=5fb9be1696623392056429b75e7de7e4&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=5fb9be1696623392056429b75e7de7e4&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ]. | Same. |
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\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.



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| 40 CFR<br>146.86(c) | <i>Tubing and packer.</i> | 47-13-13.3.c. | Tubing and packer.                                                                                                                                                                                | Same. |

\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

|                                |                                                                                                                                                                                                                                                                                                                                                            |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |
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| <p>40 CFR<br/>146.86(c)(1)</p> | <p>Tubing and packer materials used in the construction of each Class VI well must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director.</p> | <p>47-13-13.3.c.1.</p> | <p>Tubing and [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=69b17c4e5ebe33ee3e703ab77d688882&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK</a><br/>"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=69b17c4e5ebe33ee3e703ab77d688882&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] materials used in the construction of each Class 6 [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=fc19200126cc5955e16cd671ee5847e9&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK</a><br/>"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=fc19200126cc5955e16cd671ee5847e9&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] must be compatible with [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK</a><br/>"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ] with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK</a><br/>"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86" ]</p> | <p>Same.</p> |
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\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

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| 40 CFR 146.86(c)(2) | All owners or operators of Class VI wells must inject fluids through tubing with a packer set at a depth opposite a cemented interval at the location approved by the Director. | 47-13-13.3.c.2. | All [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=85003a7ae8fe56e5eee9420b19f758d6&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=85003a7ae8fe56e5eee9420b19f758d6&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] or [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0df3b20100d24c91ef2d3bc3f665d130&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0df3b20100d24c91ef2d3bc3f665d130&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] of Class 6 [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=fc19200126cc5955e16ed671ee5847e9&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=fc19200126cc5955e16ed671ee5847e9&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] must inject [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ] through tubing with a [ | Same. |
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\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

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|                        |                                                                                                                                                     |                   | <p>HYPERLINK<br/> <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=69b17c4e5ebe33ee3e703ab77d688882&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=69b17c4e5ebe33ee3e703ab77d688882&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86</a> ] set at a depth opposite a [ HYPERLINK<br/> <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=b55917579b9ca974355628335d566e3f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=b55917579b9ca974355628335d566e3f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86</a> ] interval at the location approved by the [ HYPERLINK<br/> <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86</a> ] .</p> |       |
| 40 CFR 146.86(c)(3)    | In order for the Director to determine and specify requirements for tubing and packer, the owner or operator must submit the following information: | 47-13-13.3.c.3.   | In order for the Director to determine and specify requirements for tubing and packer, the owner or operator must submit the following information:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Same. |
| 40 CFR 146.86(c)(3)(i) | Depth of setting;                                                                                                                                   | 47-13-13.3.c.3.A. | Depth of setting;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Same. |

\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

|                          |                                                                                                                                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |       |
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| 40 CFR 146.86(c)(3)(ii)  | Characteristics of the carbon dioxide stream (chemical content, corrosiveness, temperature, and density) and formation fluids; | 47-13-13.3.c.3.B. | Characteristics of the carbon dioxide stream (chemical content, corrosiveness, temperature, and density) and formation fluids;                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Same. |
| 40 CFR 146.86(c)(3)(iii) | Maximum proposed injection pressure;                                                                                           | 47-13-13.3.c.3.C. | Maximum proposed injection pressure;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Same. |
| 40 CFR 146.86(c)(3)(iv)  | Maximum proposed annular pressure;                                                                                             | 47-13-13.3.c.3.D. | Maximum proposed annular pressure;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Same. |
| 40 CFR 146.86(c)(3)(v)   | Proposed injection rate (intermittent or continuous) and volume and/or mass of the carbon dioxide stream;                      | 47-13-13.3.c.3.F. | Proposed injection rate (intermittent or continuous) and volume and/or mass of the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=27ac8590975cb5c2bea63d4b396f8c5f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=27ac8590975cb5c2bea63d4b396f8c5f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ]; | Same. |
| 40 CFR 146.86(c)(3)(vi)  | Size of tubing and casing; and                                                                                                 | 47-13-13.3.c.3.G. | Size of tubing and [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.86"</a> ];                                                                 | Same. |
| 40 CFR 146.86(c)(3)(vii) | Tubing tensile, burst, and collapse strengths.                                                                                 | 47-13-13.3.c.3.H. | Tubing tensile, burst, and collapse strengths.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Same. |

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| <p>40 CFR<br/>146.87(a)</p> | <p><b>40 CFR 146.87 Logging, sampling, and testing prior to injection well operation.</b><br/>During the drilling and construction of a Class VI injection well, the owner or operator must run appropriate logs, surveys and tests to determine or verify the depth, thickness, porosity, permeability, and lithology of, and the salinity of any formation fluids in all relevant geologic formations to ensure conformance with the injection well construction requirements under 40 CFR 146.86 and to establish accurate baseline data against which future measurements may be compared. The owner or operator must submit to the Director a descriptive report prepared by a knowledgeable log analyst that includes an interpretation of the results of such logs and tests. At a minimum, such logs and tests must include:</p> | <p>47-13-13.5.<br/>47-13-13.5.a.</p> | <p>Logging, Sampling, and Testing Prior to Injection Well Operation.<br/>During the drilling and construction of a Class 6 [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=931103cda18601abb108728de78c61dc&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=931103cda18601abb108728de78c61dc&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ], the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] must run appropriate logs, surveys and tests to determine or verify the depth, thickness, porosity, permeability, and [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8992398cdbc6cb6adcfddc578322a3be&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8992398cdbc6cb6adcfddc578322a3be&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] of, and the salinity of any [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=2945ce">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=2945ce</p> | <p>Same.</p> |
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|  |  |  | <p>9a203d84b02648b53f7a688a27&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] in all relevant geologic [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8994d4b44d989458b9f49d3b1ab7ac28&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] to ensure conformance with the [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=931103cda18601abb108728de78c61de&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] construction requirements under section 13.3 and to establish accurate baseline data against which future measurements may be compared. The [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] must submit to the [ HYPERLINK</p> |  |
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|  |  |  | <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87"</a> ] a descriptive report prepared by a knowledgeable log analyst that includes an interpretation of the results of such logs and tests. At a minimum, such logs and tests must include: |  |
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\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

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| 40 CFR<br>146.87(a)(<br>1) | Deviation checks during drilling on all holes constructed by drilling a pilot hole which is enlarged by reaming or another method. Such checks must be at sufficiently frequent intervals to determine the location of the borehole and to ensure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling; and | 47-13-13.5.a.1. | Deviation checks during drilling on all holes constructed by drilling a pilot hole which is enlarged by reaming or another method. Such checks must be at sufficiently frequent intervals to determine the location of the borehole and to ensure that vertical avenues for [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87"</a> ] [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=53539c980a463e8bc88bcb94e543a776&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=53539c980a463e8bc88bcb94e543a776&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87"</a> ] in the form of diverging holes are not created during drilling; and | Same. |
| 40 CFR<br>146.87(a)(<br>2) | Before and upon installation of the surface casing:                                                                                                                                                                                                                                                                                                            | 47-13-13.5.a.2. | Before and upon installation of the surface casing:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Same. |

\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

|                         |                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |
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| 40 CFR 146.87(a)(2)(i)  | Resistivity, spontaneous potential, and caliper logs before the casing is installed; and                                                | 47-13-13.5.a.2.A. | Resistivity, spontaneous potential, and caliper logs before the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87"</a> ] is installed; and                                                | Same. |
| 40 CFR 146.87(a)(2)(ii) | A cement bond and variable density log to evaluate cement quality radially, and a temperature log after the casing is set and cemented. | 47-13-13.5.a.2.B. | A cement bond and variable density log to evaluate cement quality radially, and a temperature log after the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87"</a> ] is set and cemented. | Same. |
| 40 CFR 146.87(a)(3)     | Before and upon installation of the long string casing:                                                                                 | 47-13-13.5.a.3.   | Before and upon installation of the long string casing:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Same. |

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| 40 CFR<br>146.87(a)(3)(i)  | Resistivity, spontaneous potential, porosity, caliper, gamma ray, fracture finder logs, and any other logs the Director requires for the given geology before the casing is installed; and | 47-13-13.5.a.3.A. | Resistivity, spontaneous potential, porosity, caliper, gamma ray, fracture finder logs, and any other logs the [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=8e845d3a1c20c5c794a0df5b8969c1ca&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] requires for the given geology before the [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=4982613686b5407853d3f3244bbd1040&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] is installed; and | Same. |
| 40 CFR<br>146.87(a)(3)(ii) | A cement bond and variable density log, and a temperature log after the casing is set and cemented.                                                                                        | 47-13-13.5.a.3.B. | A cement bond and variable density log, and a temperature log after the [ HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=4982613686b5407853d3f3244bbd1040&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] is set and cemented.                                                                                                                                                                                                                                                                                                            | Same. |

\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

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| 40 CFR 146.87(a)(4)      | A series of tests designed to demonstrate the internal and external mechanical integrity of injection wells, which may include: | 47-13-13.5.a.4.   | A series of tests designed to demonstrate the internal and external mechanical integrity of injection wells, which may include:                                                                                                                                                                                                                                                                                                                                                                        | Same. |
| 40 CFR 146.87(a)(4)(i)   | A pressure test with liquid or gas;                                                                                             | 47-13-13.5.a.4.A. | A [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=33aacac66f6b2a319cd009f81038673f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=33aacac66f6b2a319cd009f81038673f&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] test with liquid or gas; | Same. |
| 40 CFR 146.87(a)(4)(ii)  | A tracer survey such as oxygen-activation logging;                                                                              | 47-13-13.5.a.4.B. | A tracer survey such as oxygen-activation logging;                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Same. |
| 40 CFR 146.87(a)(4)(iii) | A temperature or noise log;                                                                                                     | 47-13-13.5.a.4.C. | A temperature or noise log;                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Same. |
| 40 CFR 146.87(a)(4)(iv)  | A casing inspection log; and                                                                                                    | 47-13-13.5.a.4.D. | A [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=4982613686b5407853d3f3244bbd1040&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=4982613686b5407853d3f3244bbd1040&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] inspection log; and      | Same. |

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| 40 CFR<br>146.87(a)(<br>5) | Any alternative methods that provide equivalent or better information and that are required by and/or approved of by the Director. | 47-13-13.5.a.5. | Any alternative methods that provide equivalent or better information and that are required by and/or approved of by the [ HYPERLINK<br>"https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=8e845d3a1c20c5c794a0df5b8969c1ca&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ]. | Same. |
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| 40 CFR<br>146.87(b) | The owner or operator must take whole cores or sidewall cores of the injection zone and confining system and formation fluid samples from the injection zone(s), and must submit to the Director a detailed report prepared by a log analyst that includes: well log analyses (including well logs), core analyses, and formation fluid sample information. The Director may accept information on cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The Director may require the owner or operator to core other formations in the borehole. | 47-13-13.5.b. | The [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=6542131c028f2509274a321338894e93&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] must take whole cores or sidewall cores of the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=3ab706e843abbeaf29fc3d1c7975889b&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=3ab706e843abbeaf29fc3d1c7975889b&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] and confining system and [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=2945ce9a203d84b02648b53f7a688a27&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=2945ce9a203d84b02648b53f7a688a27&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] samples from the injection zone(s), and must submit to the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=8e845d3a1c20c5c794a0df5b8969c1ca&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] | Same. |
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\* Section 145.11 does not specify that States must have legal authority to implement the shaded provisions, but some of these provisions may be necessary to clarify State program requirements. Other shaded provisions describe applicable requirements if States choose to adopt “optional” program elements such as authorization by rule.

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|  |  |  | <p>hapter:I:Subchapter:D:Part:146:Sub<br/>part:H:146.87" ] a detailed report<br/>prepared by a log analyst that includes: [ <br/>HYPERLINK<br/>"https://www.law.cornell.edu/defini<br/>tions/index.php?width=840&amp;height<br/>=800&amp;iframe=true&amp;def_id=fc1920<br/>0126cc5955e16ed671ee5847e9&amp;ter<br/>m_occur=999&amp;term_src=Title:40:C<br/>hapter:I:Subchapter:D:Part:146:Sub<br/>part:H:146.87" ] log analyses<br/>(including [ HYPERLINK<br/>"https://www.law.cornell.edu/defini<br/>tions/index.php?width=840&amp;height<br/>=800&amp;iframe=true&amp;def_id=fc1920<br/>0126cc5955e16ed671ee5847e9&amp;ter<br/>m_occur=999&amp;term_src=Title:40:C<br/>hapter:I:Subchapter:D:Part:146:Sub<br/>part:H:146.87" ] logs), core analyses,<br/>and [ HYPERLINK<br/>"https://www.law.cornell.edu/defini<br/>tions/index.php?width=840&amp;height<br/>=800&amp;iframe=true&amp;def_id=2945ce<br/>9a203d84b02648b53f7a688a27&amp;ter<br/>m_occur=999&amp;term_src=Title:40:C<br/>hapter:I:Subchapter:D:Part:146:Sub<br/>part:H:146.87" ] sample information.<br/>The [ HYPERLINK<br/>"https://www.law.cornell.edu/defini<br/>tions/index.php?width=840&amp;height<br/>=800&amp;iframe=true&amp;def_id=8e845d</p> |  |
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|  |  |  | <p>3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] may accept information on cores from nearby [ HYPERLINK</p> <p>"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=fc19200126cc5955e16ed671ee5847e9&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] if the [ HYPERLINK</p> <p>"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the [ HYPERLINK</p> <p>"https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=fc19200126cc5955e16ed671ee5847e9&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ]. The [ HYPERLINK</p> |  |
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|  |  |  | <p>"<a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87</a>" ] may require the [ HYPERLINK</p> <p>"<a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87</a>" ] to core other [ HYPERLINK</p> <p>"<a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8994d4b44d989458b9f49d3b1ab7ac28&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8994d4b44d989458b9f49d3b1ab7ac28&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87</a>" ] in the borehole.</p> |  |
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| 40 CFR<br>146.87(c) | The owner or operator must record the fluid temperature, pH, conductivity, reservoir pressure, and static fluid level of the injection zone(s). | 47-13-13.5.c. | <p>The [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] must record the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] temperature, pH, conductivity, reservoir [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=33aace66f6b2a319cd009f81038673f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=33aace66f6b2a319cd009f81038673f&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ], and static [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0ec521f766979b9479302734271476fa&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ]</p> | Same. |
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|                     |                                                                                                                                           |                 | part:H:146.87" ] level of the injection zone(s).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |
| 40 CFR 146.87(d)    | At a minimum, the owner or operator must determine or calculate the following information concerning the injection and confining zone(s): | 47-13-13.5.d.   | At a minimum, the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87"</a> ] must determine or calculate the following information concerning the injection and confining zone(s): | Same. |
| 40 CFR 146.87(d)(1) | Fracture pressure;                                                                                                                        | 47-13-13.5.d.1. | Fracture pressure;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Same. |
| 40 CFR 146.87(d)(2) | Other physical and chemical characteristics of the injection and confining zone(s); and                                                   | 47-13-13.5.d.2. | Other physical and chemical characteristics of the injection and confining zone(s); and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Same. |
| 40 CFR 146.87(d)(3) | Physical and chemical characteristics of the formation fluids in the injection zone(s).                                                   | 47-13-13.5.d.3. | Physical and chemical characteristics of the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=2945ce9a203d84b02648b53f7a688a27&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=2945ce9a203d84b02648b53f7a688a27&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87"</a> ] in the injection zone(s).                                                  | Same. |

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| 40 CFR 146.87(e)    | Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s): | 47-13-13.5.e.   | Upon completion, but prior to [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=a587af1ebf906185a43ec2313226fcfb&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=a587af1ebf906185a43ec2313226fcfb&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87"</a> ], the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87"</a> ] must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s): | Same. |
| 40 CFR 146.87(e)(1) | A pressure fall-off test; and,                                                                                                                                    | 47-13-13.5.e.1. | A pressure fall-off test; and,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Same. |
| 40 CFR 146.87(e)(2) | A pump test; or                                                                                                                                                   | 47-13-13.5.e.2. | A pump test; or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Same. |
| 40 CFR 146.87(e)(3) | Injectivity tests.                                                                                                                                                | 47-13-13.5.e.3. | Injectivity tests.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Same. |

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| 40 CFR<br>146.87(f) | The owner or operator must provide the Director with the opportunity to witness all logging and testing by this subpart. The owner or operator must submit a schedule of such activities to the Director 30 days prior to conducting the first test and submit any changes to the schedule 30 days prior to the next scheduled test. | 47-13-13.5.f. | The [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a><br>"https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=6542131c028f2509274a321338894e93&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] must provide the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a><br>"https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=8e845d3a1c20c5c794a0df5b8969c1ca&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] with the opportunity to witness all logging and testing by this subpart. The [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a><br>"https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=6542131c028f2509274a321338894e93&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] must submit a schedule of such activities to the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87">HYPERLINK</a><br>"https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=8e845d3a1c20c5c794a0df5b8969c1ca&term_occur=999&term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.87" ] | Same. |
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|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                             | hapter:I:Subchapter:D:Part:146:Sub<br>part:H:146.87" ] 30 days prior to<br>conducting the first test and submit any<br>changes to the schedule 30 days prior to<br>the next scheduled test.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                          |
| 40 CFR<br>146.88(a) | <b>40 CFR 146.88 Injection well operating requirements.</b><br><br>Except during stimulation, the owner or operator must ensure that injection pressure does not exceed 90 percent of the fracture pressure of the injection zone(s) so as to ensure that the injection does not initiate new fractures or propagate existing fractures in the injection zone(s). In no case may injection pressure initiate fractures in the confining zone(s) or cause the movement of injection or formation fluids that endangers a USDW. Pursuant to requirements at 40 CFR 146.82(a)(9), all stimulation programs must be approved by the Director as part of the permit application and incorporated into the permit. | 47-13-13.6.<br><br>47-13-13.6.a.<br><br><br>47-13-13.6.a.1. | Operating, Monitoring, and Reporting Requirements.<br><br>Operating Requirements: The Director shall, under subdivision 134.7.c prescribe requirements governing the operation of injection wells in the permit.<br>Requirements for Class 6 wells shall, at a minimum, specify that:<br><br>Except during stimulation, the owner or operator must ensure that injection pressure does not exceed 90 percent of the fracture pressure of the injection zone(s) so as to ensure that the injection does not initiate new fractures or propagate existing fractures in the injection zone(s). In no case may injection pressure initiate fractures in the confining zone(s) or cause the movement of injection or formation fluids that endangers a USDW. Pursuant to requirements at subsection 13.8.a.9., all stimulation programs must be approved by the Director as part of the permit application and incorporated into the permit. | West Virginia's rule includes introductory test that applies to the director and not the operator. no concerns for stringency.<br><br>Other text is the same as the CFR. |
| 40 CFR<br>146.88(b) | Injection between the outermost casing protecting USDWs and the well bore is prohibited.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 47-13-13.6.a.2.                                             | Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited; and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Similar.                                                                                                                                                                 |

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| 40 CFR 146.88(c)    | The owner or operator must fill the annulus between the tubing and the long string casing with a non-corrosive fluid approved by the Director. The owner or operator must maintain on the annulus a pressure that exceeds the operating injection pressure, unless the Director determines that such requirement might harm the integrity of the well or endanger USDWs. | 47-13-13.6.a.2.A. | The owner or operator must fill the annulus between the tubing and the long string casing with a non-corrosive fluid approved by the Director. The owner or operator must maintain on the annulus a pressure that exceeds the operating injection pressure, unless the Director determines that such requirement might harm the integrity of the well or endanger USDWs. | Same. |
| 40 CFR 146.88(d)    | Other than during periods of well workover (maintenance) approved by the Director in which the sealed tubing-casing annulus is disassembled for maintenance or corrective procedures, the owner or operator must maintain mechanical integrity of the injection well at all times.                                                                                       | 47-13-13.6.a.3.   | Other than during periods of well workover (maintenance) approved by the Director in which the sealed tubing-casing annulus is disassembled for maintenance or corrective procedures, the owner or operator must maintain mechanical integrity of the injection well at all times.                                                                                       | Same. |
| 40 CFR 146.88(e)    | The owner or operator must install and use:                                                                                                                                                                                                                                                                                                                              | 47-13-13.6.a.4.   | The owner or operator must install and use:                                                                                                                                                                                                                                                                                                                              | Same. |
| 40 CFR 146.88(e)(1) | Continuous recording devices to monitor: the injection pressure; the rate, volume and/or mass, and temperature of the carbon dioxide stream; and the pressure on the annulus between the tubing and the long string casing and annulus fluid volume; and                                                                                                                 | 47-13-13.6.a.4.A. | Continuous recording devices to monitor: The injection pressure; the rate, volume and/or mass, and temperature of the carbon dioxide stream; and the pressure on the annulus between the tubing and the long string casing and annulus fluid volume; and                                                                                                                 | Same. |
| 40 CFR 146.88(e)(2) | Alarms and automatic surface shut-off systems or, at the discretion of the Director, down-hole shut-off systems (e.g., automatic shut-off, check valves) for onshore wells or, other mechanical devices that provide equivalent protection; and                                                                                                                          | 47-13-13.6.a.4.B. | Alarms and automatic surface shut-off systems or, at the discretion of the Director, down-hole shut-off systems (e.g., automatic shut-off, check valves) for onshore wells or, other mechanical devices that provide equivalent protection; and                                                                                                                          | Same. |

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| 40 CFR 146.88(e)(3) | Alarms and automatic down-hole shut-off systems for wells located offshore but within State territorial waters, designed to alert the operator and shut-in the well when operating parameters such as annulus pressure, injection rate, or other parameters diverge beyond permitted ranges and/or gradients specified in the permit.                                                                                                                                                     | 47-13-13.6.a.4.C. | Alarms and automatic down-hole shut-off systems for wells located offshore but within State territorial waters, designed to alert the operator and shut-in the well when operating parameters such as annulus pressure, injection rate, or other parameters diverge beyond permitted ranges and/or gradients specified in the permit.                                                                                                                                                     | Same. |
| 40 CFR 146.88(f)    | If a shutdown (i.e., down-hole or at the surface) is triggered or a loss of mechanical integrity is discovered, the owner or operator must immediately investigate and identify as expeditiously as possible the cause of the shutoff. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required under paragraph (e) of this section otherwise indicates that the well may be lacking mechanical integrity, the owner or operator must: | 47-13-13.6.a.5.   | If a shutdown (i.e., down-hole or at the surface) is triggered or a loss of mechanical integrity is discovered, the owner or operator must immediately investigate and identify as expeditiously as possible the cause of the shutoff. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required under paragraph (e) of this section otherwise indicates that the well may be lacking mechanical integrity, the owner or operator must: | Same. |
| 40 CFR 146.88(f)(1) | Immediately cease injection;                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 47-13-13.6.a.5.A. | Immediately cease injection;                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Same. |
| 40 CFR 146.88(f)(2) | Take all steps reasonably necessary to determine whether there may have been a release of the injected carbon dioxide stream or formation fluids into any unauthorized zone;                                                                                                                                                                                                                                                                                                              | 47-13-13.6.a.5.B. | Take all steps reasonably necessary to determine whether there may have been a release of the injected carbon dioxide stream or formation fluids into any unauthorized zone;                                                                                                                                                                                                                                                                                                              | Same. |
| 40 CFR 146.88(f)(3) | Notify the Director within 24 hours;                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 47-13-13.6.a.5.C. | Notify the Director within 24 hours;                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Same. |
| 40 CFR 146.88(f)(4) | Restore and demonstrate mechanical integrity to the satisfaction of the Director prior to resuming injection; and                                                                                                                                                                                                                                                                                                                                                                         | 47-13-13.6.a.5.D. | Restore and demonstrate mechanical integrity to the satisfaction of the Director prior to resuming injection; and                                                                                                                                                                                                                                                                                                                                                                         | Same. |
| 40 CFR 146.88(f)(5) | Notify the Director when injection can be expected to resume.                                                                                                                                                                                                                                                                                                                                                                                                                             | 47-13-13.6.a.5.E. | Notify the Director when injection can be expected to resume.                                                                                                                                                                                                                                                                                                                                                                                                                             | Same. |

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| 40 CFR 146.89(a)    | <b>40 CFR 146.89 Mechanical integrity.</b><br>A Class VI well has mechanical integrity if:                                                                                                                                                                                                                                                             | 47-13-6.2.a.     | Mechanical Integrity.<br>An injection well has mechanical integrity if:                                                                                                                                                                                                                                                                                            | Same.                        |
| 40 CFR 146.89(a)(1) | There is no significant leak in the casing, tubing, or packer; and                                                                                                                                                                                                                                                                                     | 47-13-6.1.a.1.   | There is no significant leak in the casing, tubing, or packer; and                                                                                                                                                                                                                                                                                                 | Same.                        |
| 40 CFR 146.89(a)(2) | There is no significant fluid movement into a USDW through channels adjacent to the injection well bore.                                                                                                                                                                                                                                               | 47-13-6.1.a.2.   | There is no significant fluid movement into an underground source of drinking water through channels adjacent to the injection well bore.                                                                                                                                                                                                                          | Similar.                     |
| 40 CFR 146.89(b)    | To evaluate the absence of significant leaks under paragraph (a)(1) of this section, owners or operators must, following an initial annulus pressure test, continuously monitor injection pressure, rate, injected volumes; pressure on the annulus between tubing and long-string casing; and annulus fluid volume as specified in 40 CFR 146.88 (e); | 47-13-6.2.c.5.   | For Class 6 wells, to evaluate the absence of significant leaks under 6.2.a. of this section, owners or operators must, following an initial annulus pressure test, continuously monitor injection pressure, rate, injected volumes; pressure on the annulus between tubing and long-string casing; and annulus fluid volume as specified in subsection 13.6.a.5.; | Same.                        |
| 40 CFR 146.89(c)    | At least once per year, the owner or operator must use one of the following methods to determine the absence of significant fluid movement under paragraph (a)(2) of this section:                                                                                                                                                                     | 47-13-6.2.c.5.A. | At least once per year, the owner or operator must use an approved tracer survey such as an oxygen-activation log or a temperature or noise log to determine the absence of significant fluid movement under 6.2.b. of this section.                                                                                                                               | Similar to 146.89(c)(1)-(2). |
| 40 CFR 146.89(c)(1) | An approved tracer survey such as an oxygen-activation log; or                                                                                                                                                                                                                                                                                         |                  |                                                                                                                                                                                                                                                                                                                                                                    | See above.                   |
| 40 CFR 146.89(c)(2) | A temperature or noise log.                                                                                                                                                                                                                                                                                                                            |                  |                                                                                                                                                                                                                                                                                                                                                                    | See above.                   |

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| 40 CFR 146.89(d) | If required by the Director, at a frequency specified in the testing and monitoring plan required at 40 CFR 146.90, the owner or operator must run a casing inspection log to determine the presence or absence of corrosion in the long-string casing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 47-13-6.2.c.5.B. | If required by the Director, at a frequency specified in the testing and monitoring plan required at subsection 13.6.b., the owner or operator must run a casing inspection log to determine the presence or absence of corrosion in the long-string casing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Same. |
| 40 CFR 146.89(e) | The Director may require any other test to evaluate mechanical integrity under paragraphs (a)(1) or (a)(2) of this section. Also, the Director may allow the use of a test to demonstrate mechanical integrity other than those listed above with the written approval of the Administrator. To obtain approval for a new mechanical integrity test, the Director must submit a written request to the Administrator setting forth the proposed test and all technical data supporting its use. The Administrator may approve the request if he or she determines that it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the Administrator will be published in the <i>Federal Register</i> and may be used in all States in accordance with applicable State law unless its use is restricted at the time of approval by the Administrator. | 47-13-6.2.c.5.C. | The Director may require any other test to evaluate mechanical integrity under 6.2.c.5. of this section. Also, the Director may allow the use of a test to demonstrate mechanical integrity other than those listed above with the written approval of the Administrator. To obtain approval for a new mechanical integrity test, the Director must submit a written request to the Administrator setting forth the proposed test and all technical data supporting its use. The Administrator may approve the request if he or she determines that it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the Administrator will be published in the FEDERAL REGISTER and may be used in all States in accordance with applicable State law unless its use is restricted at the time of approval by the Administrator | Same. |

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| 40 CFR<br>146.89(f) | In conducting and evaluating the tests enumerated in this section or others to be allowed by the Director, the owner or operator and the Director must apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he/she shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director must review monitoring and other test data submitted since the previous evaluation. | 47-13-6.2.c.5.D. | In conducting and evaluating the tests enumerated in this section or others to be allowed by the Director, the owner or operator and the Director must apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he/she shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director must review monitoring and other test data submitted since the previous evaluation. | Same. |
| 40 CFR<br>146.89(g) | The Director may require additional or alternative tests if the results presented by the owner or operator under paragraphs (a) through (d) of this section are not satisfactory to the Director to demonstrate that there is no significant leak in the casing, tubing, or packer, or to demonstrate that there is no significant movement of fluid into a USDW resulting from the injection activity as stated in paragraphs (a)(1) and (2) of this section.                                                                | 47-13-6.2.c.5.E. | The Director may require additional or alternative tests if the results presented by the owner or operator under paragraphs A through D of this subsection are not satisfactory to the Director to demonstrate that there is no significant leak in the casing, tubing, or packer, or to demonstrate that there is no significant movement of fluid into a USDW resulting from the injection activity as stated in 6.2.a. of this section; or                                                                                 | Same. |

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| 40 CFR 146.90    | <b>40 CFR 146.90 Testing and monitoring requirements.</b><br>The owner or operator of a Class VI well must prepare, maintain, and comply with a testing and monitoring plan to verify that the geologic sequestration project is operating as permitted and is not endangering USDWs. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The testing and monitoring plan must be submitted with the permit application, for Director approval, and must include a description of how the owner or operator will meet the requirements of this section, including accessing sites for all necessary monitoring and testing during the life of the project. Testing and monitoring associated with geologic sequestration projects must, at a minimum, include: | 47-13-          | 13.6.b. Testing and monitoring requirements. The owner or operator of a Class 6 well must prepare, maintain, and comply with a testing and monitoring plan to verify that the geologic sequestration project is operating as permitted and is not endangering USDWs. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The testing and monitoring plan must be submitted with the permit application, for Director approval, and must include a description of how the owner or operator will meet the requirements of this section, including accessing sites for all necessary monitoring and testing during the life of the project. Testing and monitoring associated with geologic sequestration projects must, at a minimum, include: | Same.                                                                                                                                      |
| 40 CFR 146.90(a) | Analysis of the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 47-13-13.6.b.1. | Analysis of the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Same.                                                                                                                                      |
| 40 CFR 146.90(b) | Installation and use, except during well workovers as defined in 40 CFR 146.88(d), of continuous recording devices to monitor injection pressure, rate, and volume; the pressure on the annulus between the tubing and the long string casing; and the annulus fluid volume added;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 47-13-13.6.b.2. | Installation and use, except during well workovers as defined in subsection 13.6.a.4., of continuous recording devices to monitor injection pressure, rate, and volume; the pressure on the annulus between the tubing and the long string casing; and the annulus fluid volume added;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Same.<br><br>13.6.a.4 relates to continuous monitoring equipment; suggest revision to reference 47-13-13.6.a.3 for reference to workovers. |

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| 40 CFR 146.90(c)    | Corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion, which must be performed on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in 40 CFR 146.86(b), by: | 47-13-13.6.b.3.   | Corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion, which must be performed on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in subsection 13.3.b. and 13.3.b.1., by: | Same. |
| 40 CFR 146.90(c)(1) | Analyzing coupons of the well construction materials placed in contact with the carbon dioxide stream; or                                                                                                                                                                                                    | 47-13-13.6.b.3.A. | Analyzing coupons of the well construction materials placed in contact with the carbon dioxide stream; or                                                                                                                                                                                                                    | Same. |
| 40 CFR 146.90(c)(2) | Routing the carbon dioxide stream through a loop constructed with the material used in the well and inspecting the materials in the loop; or                                                                                                                                                                 | 47-13-13.6.b.3.B. | Routing the carbon dioxide stream through a loop constructed with the material used in the well and inspecting the materials in the loop; or                                                                                                                                                                                 | Same. |
| 40 CFR 146.90(c)(3) | Using an alternative method approved by the Director;                                                                                                                                                                                                                                                        | 47-13-13.6.b.3.C. | Using an alternative method approved by the Director;                                                                                                                                                                                                                                                                        | Same. |
| 40 CFR 146.90(d)    | Periodic monitoring of the ground water quality and geochemical changes above the confining zone(s) that may be a result of carbon dioxide movement through the confining zone(s) or additional identified zones including:                                                                                  | 47-13-13.6.b.4.   | Periodic monitoring of the ground water quality and geochemical changes above the confining zone(s) that may be a result of carbon dioxide movement through the confining zone(s) or additional identified zones including:                                                                                                  | Same. |
| 40 CFR 146.90(d)(1) | The location and number of monitoring wells based on specific information about the geologic sequestration project, including injection rate and volume, geology, the presence of artificial penetrations, and other factors; and                                                                            | 47-13-13.6.b.4.A. | The location and number of monitoring wells based on specific information about the geologic sequestration project, including injection rate and volume, geology, the presence of artificial penetrations, and other factors; and                                                                                            | Same. |
| 40 CFR 146.90(d)(2) | The monitoring frequency and spatial distribution of monitoring wells based on baseline geochemical data that has been collected under 40 CFR 146.82(a)(6) and on any modeling results in the area of review evaluation required by 40 CFR 146.84(c).                                                        | 47-13-13.6.b.4.B. | The monitoring frequency and spatial distribution of monitoring wells based on baseline geochemical data that has been collected under subsection 13.8.a.6. and on any modeling results in the area of review evaluation required by subsection 14.9.c.                                                                      | Same. |

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| 40 CFR 146.90(e)    | A demonstration of external mechanical integrity pursuant to 40 CFR 146.89(c) at least once per year until the injection well is plugged; and, if required by the Director, a casing inspection log pursuant to requirements at 40 CFR 146.89(d) at a frequency established in the testing and monitoring plan; | 47-13-13.6.b.5.   | A demonstration of external mechanical integrity pursuant to subsection 6.2.c. at least once per year until the injection well is plugged; and, if required by the Director, a casing inspection log pursuant to requirements at subsection 6.2.c.5.A. at a frequency established in the testing and monitoring plan; | Same. |
| 40 CFR 146.90(f)    | A pressure fall-off test at least once every five years unless more frequent testing is required by the Director based on site-specific information;                                                                                                                                                            | 47-13-13.6.b.6.   | A pressure fall-off test at least once every five years unless more frequent testing is required by the Director based on site-specific information;                                                                                                                                                                  | Same. |
| 40 CFR 146.90(g)    | Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using:                                                                                                                                                    | 47-13-13.6.b.7.   | Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using:                                                                                                                                                          | Same. |
| 40 CFR 146.90(g)(1) | Direct methods in the injection zone(s); and,                                                                                                                                                                                                                                                                   | 47-13-13.6.b.7.A. | Direct methods in the injection zone(s); and,                                                                                                                                                                                                                                                                         | Same. |
| 40 CFR 146.90(g)(2) | Indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate;                                                                       | 47-13-13.6.b.7.B. | Indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate;                                                                             | Same. |
| 40 CFR 146.90(h)    | The Director may require surface air monitoring and/or soil gas monitoring to detect movement of carbon dioxide that could endanger a USDW.                                                                                                                                                                     | 47-13-13.6.b.8.   | The Director may require surface air monitoring and/or soil gas monitoring to detect movement of carbon dioxide that could endanger a USDW.                                                                                                                                                                           | Same. |
| 40 CFR 146.90(h)(1) | Design of Class VI surface air and/or soil gas monitoring must be based on potential risks to USDWs within the area of review;                                                                                                                                                                                  | 47-13-13.6.b.8.A. | Design of Class 6 surface air and/or soil gas monitoring must be based on potential risks to USDWs within the area of review;                                                                                                                                                                                         | Same. |

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| 40 CFR 146.90(h)(2) | The monitoring frequency and spatial distribution of surface air monitoring and/or soil gas monitoring must be decided using baseline data, and the monitoring plan must describe how the proposed monitoring will yield useful information on the area of review delineation and/or compliance with standards under 40 CFR 144.12;                                                                                                                                                                                                                         | 47-13-13.6.b.8.B. | The monitoring frequency and spatial distribution of surface air monitoring and/or soil gas monitoring must be decided using baseline data, and the monitoring plan must describe how the proposed monitoring will yield useful information on the area of review delineation and/or compliance with standards under § 47 CSR 13;                                                                                                                                                                                                                  | Same.<br><br>Suggest a more specific reference within 47 CSR 13 (e.g., the General Prohibition of Movement of Fluid into USDWs at 47-13-14.1). |
| 40 CFR 146.90(h)(3) | If an owner or operator demonstrates that monitoring employed under 40 CFR 98.440 to 98.449 of this chapter (Clean Air Act, 42 U.S.C. 7401 et seq.) accomplishes the goals of (h)(1) and (2) of this section, and meets the requirements pursuant to 40 CFR 146.91(c)(5), a Director that requires surface air/soil gas monitoring must approve the use of monitoring employed under 98.440 to 98.449 of this chapter. Compliance with 40 CFR 98.440 to 98.449 of this chapter pursuant to this provision is considered a condition of the Class VI permit; | 47-13-13.6.b.8.C. | If an owner or operator demonstrates that monitoring employed under §§ 98.440 to 98.449 of this chapter (Clean Air Act, 42 U.S.C. 7401 et seq.) accomplishes the goals of 13.6.b.8.A. and 13.6.b.8.B. above, and meets the requirements pursuant to 13.6.c.1.C.v., a Director that requires surface air/soil gas monitoring must approve the use of monitoring employed under §§ 98.440 to 98.449 of this chapter. Compliance with §§ 98.440 to 98.449 of this chapter pursuant to this provision is considered a condition of the Class 6 permit; | Same. Note that for clarity “§§ 98.440 to 98.449 of this chapter” should refer to “40 CFR 98.440 to 98.449.”                                   |
| 40 CFR 146.90(i)    | Any additional monitoring, as required by the Director, necessary to support, upgrade, and improve computational modeling of the area of review evaluation required under 40 CFR 146.84(c) and to determine compliance with standards under 40 CFR 144.12;                                                                                                                                                                                                                                                                                                  | 47-13-13.6.b.9.   | Any additional monitoring, as required by the Director, necessary to support, upgrade, and improve computational modeling of the area of review evaluation required under subsection 14.9.c. and to determine compliance with standards under section 14.1 of this rule;                                                                                                                                                                                                                                                                           | Same.                                                                                                                                          |

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| 40 CFR 146.90(j)    | The owner or operator shall periodically review the testing and monitoring plan to incorporate monitoring data collected under this subpart, operational data collected under 40 CFR 146.88, and the most recent area of review reevaluation performed under 40 CFR 146.84(e). In no case shall the owner or operator review the testing and monitoring plan less often than once every five years. Based on this review, the owner or operator shall submit an amended testing and monitoring plan or demonstrate to the Director that no amendment to the testing and monitoring plan is needed. Any amendments to the testing and monitoring plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at 40 CFR 144.39 or 144.41, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows: | 47-13-13.6.b.10.   | The owner or operator shall periodically review the testing and monitoring plan to incorporate monitoring data collected under this subpart, operational data collected under section 13.6., and the most recent area of review reevaluation performed under subsection 14.9.e. In no case shall the owner or operator review the testing and monitoring plan less often than once every five years. Based on this review, the owner or operator shall submit an amended testing and monitoring plan or demonstrate to the Director that no amendment to the testing and monitoring plan is needed. Any amendments to the testing and monitoring plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at sections 14.8 and 14.20 of this rule, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows: | Same. |
| 40 CFR 146.90(j)(1) | Within one year of an area of review reevaluation;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 47-13-13.6.b.10.A. | Within one year of an area of review reevaluation;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Same. |
| 40 CFR 146.90(j)(2) | Following any significant changes to the facility, such as addition of monitoring wells or newly permitted injection wells within the area of review, on a schedule determined by the Director; or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 47-13-13.6.b.10.B. | Following any significant changes to the facility, such as addition of monitoring wells or newly permitted injection wells within the area of review, on a schedule determined by the Director; or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Same. |
| 40 CFR 146.90(j)(3) | When required by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 47-13-13.6.b.10.C. | When required by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Same. |
| 40 CFR 146.90(k)    | A quality assurance and surveillance plan for all testing and monitoring requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 47-13-13.6.b.11.   | A quality assurance and surveillance plan for all testing and monitoring requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Same. |

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| 40 CFR 146.91       | <b>40 CFR 146.91 Reporting requirements.</b><br><br>The owner or operator must, at a minimum, provide, as specified in paragraph (e) of this section, the following reports to the Director, for each permitted Class VI well: | 47-13-13.6.c.<br><br>47-13-13.6.c.1. | Reporting requirements: The Director shall prescribe the form, manner, content, and frequency of reporting by the operator. The operator shall be required to identify the types of tests and methods used to generate the monitoring data. At a minimum, requirements shall include:<br><br>The owner or operator must, at a minimum, provide, as specified in 13.6.c.1.E., the following reports to the Director, for each permitted Class 6 well: | The introductory text of West Virginia's rule contains requirements for the director that are not in the CFR. No concerns for stringency. |
| 40 CFR 146.91(a)    | Semi-annual reports containing:                                                                                                                                                                                                | 47-13-13.6.c.1.A.                    | Semi-annual reports containing:                                                                                                                                                                                                                                                                                                                                                                                                                      | Same.                                                                                                                                     |
| 40 CFR 146.91(a)(1) | Any changes to the physical, chemical, and other relevant characteristics of the carbon dioxide stream from the proposed operating data;                                                                                       | 47-13-13.6.c.1.A.i.                  | Any changes to the physical, chemical, and other relevant characteristics of the carbon dioxide stream from the proposed operating data;                                                                                                                                                                                                                                                                                                             | Same.                                                                                                                                     |
| 40 CFR 146.91(a)(2) | Monthly average, maximum, and minimum values for injection pressure, flow rate and volume, and annular pressure;                                                                                                               | 47-13-13.6.c.1.A.ii.                 | Monthly average, maximum, and minimum values for injection pressure, flow rate and volume, and annular pressure;                                                                                                                                                                                                                                                                                                                                     | Same.                                                                                                                                     |
| 40 CFR 146.91(a)(3) | A description of any event that exceeds operating parameters for annulus pressure or injection pressure specified in the permit;                                                                                               | 47-13-13.6.c.1.A.iii.                | A description of any event that exceeds operating parameters for annulus pressure or injection pressure specified in the permit;                                                                                                                                                                                                                                                                                                                     | Same.                                                                                                                                     |
| 40 CFR 146.91(a)(4) | A description of any event which triggers a shut-off device required pursuant to 40 CFR 146.88(e) and the response taken;                                                                                                      | 47-13-13.6.c.1.A.iv.                 | A description of any event which triggers a shut-off device required pursuant to subsection 13.6.a.2. and the response taken;                                                                                                                                                                                                                                                                                                                        | Same.<br>13.6.a.2. is the prohibition of injection behind the outermost casing; Section 13.6.a.4 references shutoffs; suggest revision.   |
| 40 CFR 146.91(a)(5) | The monthly volume and/or mass of the carbon dioxide stream injected over the reporting period and the volume injected cumulatively over the life of the project;                                                              | 47-13-13.6.c.1.A.v.                  | The monthly volume and/or mass of the carbon dioxide stream injected over the reporting period and the volume injected cumulatively over the life of the project;                                                                                                                                                                                                                                                                                    | Same.                                                                                                                                     |
| 40 CFR 146.91(a)(6) | Monthly annulus fluid volume added; and                                                                                                                                                                                        | 47-13-13.6.c.1.A.vi.                 | Monthly annulus fluid volume added; and                                                                                                                                                                                                                                                                                                                                                                                                              | Same.                                                                                                                                     |

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| 40 CFR 146.91(a)(7) | The results of monitoring prescribed under 40 CFR 146.90.                                                                                                                                                                        | 47-13-13.6.c.1.A.vii. | The results of monitoring prescribed under subsection 13.6.b.                                                                                                                                                                        | Same. |
| 40 CFR 146.91(b)    | Report, within 30 days, the results of:                                                                                                                                                                                          | 47-13-13.6.c.1.B.     | Report, within 30 days, the results of:                                                                                                                                                                                              | Same. |
| 40 CFR 146.91(b)(1) | Periodic tests of mechanical integrity;                                                                                                                                                                                          | 47-13-13.6.c.1.B.i.   | Periodic tests of mechanical integrity;                                                                                                                                                                                              | Same. |
| 40 CFR 146.91(b)(2) | Any well workover; and,                                                                                                                                                                                                          | 47-13-13.6.c.1.B.ii.  | Any well workover; and,                                                                                                                                                                                                              | Same. |
| 40 CFR 146.91(b)(3) | Any other test of the injection well conducted by the permittee if required by the Director.                                                                                                                                     | 47-13-13.6.c.1.B.iii. | Any other test of the injection well conducted by the permittee if required by the Director.                                                                                                                                         | Same. |
| 40 CFR 146.91(c)    | Report, within 24 hours:                                                                                                                                                                                                         | 47-13-13.6.c.1.C.     | Report, within 24 hours:                                                                                                                                                                                                             | Same. |
| 40 CFR 146.91(c)(1) | Any evidence that the injected carbon dioxide stream or associated pressure front may cause an endangerment to a USDW;                                                                                                           | 47-13-13.6.c.1.C.i.   | Any evidence that the injected carbon dioxide stream or associated pressure front may cause an endangerment to a USDW;                                                                                                               | Same. |
| 40 CFR 146.91(c)(2) | Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs;                                                                                        | 47-13-13.6.c.1.C.ii.  | Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs;                                                                                            | Same. |
| 40 CFR 146.91(c)(3) | Any triggering of a shut-off system (i.e., down-hole or at the surface);                                                                                                                                                         | 47-13-13.6.c.1.C.iii. | Any triggering of a shut-off system (i.e., down-hole or at the surface);                                                                                                                                                             | Same. |
| 40 CFR 146.91(c)(4) | Any failure to maintain mechanical integrity; or.                                                                                                                                                                                | 47-13-13.6.c.1.C.iv.  | Any failure to maintain mechanical integrity; or.                                                                                                                                                                                    | Same. |
| 40 CFR 146.91(c)(5) | Pursuant to compliance with the requirement at 40 CFR 146.90(h) for surface air/soil gas monitoring or other monitoring technologies, if required by the Director, any release of carbon dioxide to the atmosphere or biosphere. | 47-13-13.6.c.1.C.v.   | Pursuant to compliance with the requirement at subsection 13.6.b.8. for surface air/soil gas monitoring or other monitoring technologies, if required by the Director, any release of carbon dioxide to the atmosphere or biosphere. | Same. |
| 40 CFR 146.91(d)    | Owners or operators must notify the Director in writing 30 days in advance of:                                                                                                                                                   | 47-13-13.6.c.1.D.     | Owners or operators must notify the Director in writing 30 days in advance of:                                                                                                                                                       | Same. |

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| 40 CFR 146.91(d)(1) | Any planned well workover;                                                                                                                                                                                                                                                             | 47-13-13.6.c.1.D.i.   | Any planned well workover;                                                                                                                                                                                                                                                                 | Same.                                                                            |
| 40 CFR 146.91(d)(2) | Any planned stimulation activities, other than stimulation for formation testing conducted under 40 CFR 146.82; and                                                                                                                                                                    | 47-13-                | (2) Any planned stimulation activities, other than stimulation for formation testing conducted under subsection 13.8.a.9., and                                                                                                                                                             | Same.<br><br>It appears that this provision has inconsistent citation numbering. |
| 40 CFR 146.91(d)(3) | Any other planned test of the injection well conducted by the permittee.                                                                                                                                                                                                               | 47-13-13.6.c.1.D.ii.  | Any other planned test of the injection well conducted by the permittee.                                                                                                                                                                                                                   | Same.                                                                            |
| 40 CFR 146.91(e)    | Regardless of whether a State has primary enforcement responsibility, owners or operators must submit all required reports, submittals, and notifications under subpart H of this part to EPA in an electronic format approved by EPA.                                                 | 47-13-13.6.c.1.E.     | Regardless of whether a State has primary enforcement responsibility, owners or operators must submit all required reports, submittals, and notifications under subpart H of § 40 CFR 146 to EPA in an electronic format approved by EPA.                                                  | Same.                                                                            |
| 40 CFR 146.91(f)    | Records shall be retained by the owner or operator as follows:                                                                                                                                                                                                                         | 47-13-13.6.c.1.F.     | Records shall be retained by the owner or operator as follows:                                                                                                                                                                                                                             | Same.                                                                            |
| 40 CFR 146.91(f)(1) | All data collected under 40 CFR 146.82 for Class VI permit applications shall be retained throughout the life of the geologic sequestration project and for 10 years following site closure.                                                                                           | 47-13-13.6.c.1.F.i.   | All data collected under §47-13-13. for Class permit applications shall be retained throughout the life of the geologic sequestration project and for 10 years following site closure.                                                                                                     | Same. Suggest referencing Section 13.8 (required Class VI permit information).   |
| 40 CFR 146.91(f)(2) | Data on the nature and composition of all injected fluids collected pursuant to 40 CFR 146.90(a) shall be retained until 10 years after site closure. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period. | 47-13-13.6.c.1.F.ii.  | Data on the nature and composition of all injected fluids collected pursuant to subsection 13.6.b.1. shall be retained until 10 years after site closure. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period. | Same.                                                                            |
| 40 CFR 146.91(f)(3) | Monitoring data collected pursuant to 40 CFR 146.90(b) through (i) shall be retained for 10 years after it is collected.                                                                                                                                                               | 47-13-13.6.c.1.F.iii. | Monitoring data collected pursuant to subsections 13.6.b.2. through 13.6.b.9. shall be retained for 10 years after it is collected.                                                                                                                                                        | Same.                                                                            |

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| 40 CFR 146.91(f)(4) | Well plugging reports, post-injection site care data, including, if appropriate, data and information used to develop the demonstration of the alternative post-injection site care timeframe, and the site closure report collected pursuant to requirements at 40 CFR 146.93(f) and (h) shall be retained for 10 years following site closure.                                                                                     | 47-13-13.6.c.1.F.iv. | Well plugging reports, post-injection site care data, including, if appropriate, data and information used to develop the demonstration of the alternative post-injection site care timeframe, and the site closure report collected pursuant to requirements at subsections 13.9.f. and 13.9.h. shall be retained for 10 years following site closure.                                                                      | Same.                                                                                                                                        |
| 40 CFR 146.91(f)(5) | The Director has authority to require the owner or operator to retain any records required in this subpart for longer than 10 years after site closure.                                                                                                                                                                                                                                                                              | 47-13-13.6.c.1.F.v.  | The Director has authority to require the owner or operator to retain any records required in this subpart for longer than 10 years after site closure.                                                                                                                                                                                                                                                                      | Same.                                                                                                                                        |
| 40 CFR 146.92(a)    | <b>40 CFR 146.92 Injection well plugging.</b> Prior to the well plugging, the owner or operator must flush each Class VI injection well with a buffer fluid, determine bottomhole reservoir pressure, and perform a final external mechanical integrity test.                                                                                                                                                                        | 47-13-13.4.          | Abandonment of Class 6 Wells. Owners and operators shall abandon Class 6 wells in a manner to be prescribed by the Director under sub-division 134.7.f., in addition to the following:<br>13.4.a. Prior to the well plugging, the owner or operator must flush each Class 6 injection well with a buffer fluid, determine bottomhole reservoir pressure, and perform a final external mechanical integrity test.             | The reference the requirements of sub-division 134.7.f is unclear.<br><br>No concerns for stringency as the state requirements match 146.93. |
| 40 CFR 146.92(b)    | <i>Well Plugging Plan.</i> The owner or operator of a Class VI well must prepare, maintain, and comply with a plan that is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The well plugging plan must be submitted as part of the permit application and must include the following information: | 47-13-13.4.b.        | Well plugging plan. The owner or operator of a Class 6 well must prepare, maintain, and comply with a plan that is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The well plugging plan must be submitted as part of the permit application and must include the following information: | Same.                                                                                                                                        |
| 40 CFR 146.92(b)(1) | Appropriate tests or measures for determining bottomhole reservoir pressure;                                                                                                                                                                                                                                                                                                                                                         | 47-13-13.4.b.1.      | Appropriate tests or measures for determining bottomhole reservoir pressure;                                                                                                                                                                                                                                                                                                                                                 | Same.                                                                                                                                        |

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| 40 CFR 146.92(b)(2) | Appropriate testing methods to ensure external mechanical integrity as specified in 40 CFR 146.89;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 47-13-13.4.b.2. | Appropriate testing methods to ensure external mechanical integrity as specified in section 6.2;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Same.                                                               |
| 40 CFR 146.92(b)(3) | The type and number of plugs to be used;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 47-13-13.4.b.3. | The type and number of plugs to be used;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Same.                                                               |
| 40 CFR 146.92(b)(4) | The placement of each plug, including the elevation of the top and bottom of each plug;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 47-13-13.4.b.4. | The placement of each plug, including the elevation of the top and bottom of each plug                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Same.                                                               |
| 40 CFR 146.92(b)(5) | The type, grade, and quantity of material to be used in plugging. The material must be compatible with the carbon dioxide stream; and                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 47-13-13.4.b.5. | The type, grade, and quantity of material to be used in plugging. The material must be compatible with the carbon dioxide stream; and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Same.                                                               |
| 40 CFR 146.92(b)(6) | The method of placement of the plugs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 47-13-13.4.b.6. | The method of placement of the plugs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Same.                                                               |
| 40 CFR 146.92(c)    | <i>Notice of intent to plug.</i> The owner or operator must notify the Director in writing pursuant to 40 CFR 146.91(e), at least 60 days before plugging of a well. At this time, if any changes have been made to the original well plugging plan, the owner or operator must also provide the revised well plugging plan. The Director may allow for a shorter notice period. Any amendments to the injection well plugging plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at 40 CFR 144.39 or 144.41, as appropriate. | 47-13-13.4.c.   | Notice of intent to plug. The owner or operator must notify the Director in writing pursuant to subsection 13.6.c.1.E., at least 60 days before plugging of a well. At this time, if any changes have been made to the original well plugging plan, the owner or operator must also provide the revised well plugging plan. The Director may allow for a shorter notice period. Any amendments to the injection well plugging plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at sections 14.8 and 14.20 of this rule, as appropriate. | Same.<br><br>Section 14.18 is the better match to 144.39 than 14.8. |

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| 40 CFR 146.92(d)        | <i>Plugging report.</i> Within 60 days after plugging, the owner or operator must submit, pursuant to 40 CFR 146.91(e), a plugging report to the Director. The report must be certified as accurate by the owner or operator and by the person who performed the plugging operation (if other than the owner or operator.) The owner or operator shall retain the well plugging report for 10 years following site closure.                                            | 47-13-                           | 13.4.d. Plugging report. Within 60 days after plugging, the owner or operator must submit, pursuant to subsection 13.6.c.1.E, a plugging report to the Director. The report must be certified as accurate by the owner or operator and by the person who performed the plugging operation (if other than the owner or operator.) The owner or operator shall retain the well plugging report for 10 years following site closure.    | Same. |
| 40 CFR 146.93(a)        | <b>40 CFR 146.93 Post-injection site care and site closure.</b><br><br>The owner or operator of a Class VI well must prepare, maintain, and comply with a plan for post-injection site care and site closure that meets the requirements of paragraph (a)(2) of this section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. | 47-13-13.9.<br><br>47-13-13.9.a. | Post-injection Site Care and Site Closure.<br><br>The owner or operator of a Class 6 well must prepare, maintain, and comply with a plan for post-injection site care and site closure that meets the requirements of subsection 13.9.a.2. and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. | Same. |
| 40 CFR 146.93(a)(1)     | The owner or operator must submit the post-injection site care and site closure plan as a part of the permit application to be approved by the Director.                                                                                                                                                                                                                                                                                                               | 47-13-13.9.a.1.                  | The owner or operator must submit the post-injection site care and site closure plan as a part of the permit application to be approved by the Director.                                                                                                                                                                                                                                                                             | Same. |
| 40 CFR 146.93(a)(2)     | The post-injection site care and site closure plan must include the following information:                                                                                                                                                                                                                                                                                                                                                                             | 47-13-13.9.a.2.                  | The post-injection site care and site closure plan must include the following information:                                                                                                                                                                                                                                                                                                                                           | Same. |
| 40 CFR 146.93(a)(2)(i)  | The pressure differential between pre-injection and predicted post-injection pressures in the injection zone(s);                                                                                                                                                                                                                                                                                                                                                       | 47-13-13.9.a.2.A.                | The pressure differential between pre-injection and predicted post-injection pressures in the injection zone(s);                                                                                                                                                                                                                                                                                                                     | Same. |
| 40 CFR 146.93(a)(2)(ii) | The predicted position of the carbon dioxide plume and associated pressure front at site closure as demonstrated in the area of review evaluation required under 40 CFR 146.84(c)(1);                                                                                                                                                                                                                                                                                  | 47-13-13.9.a.2.B.                | The predicted position of the carbon dioxide plume and associated pressure front at site closure as demonstrated in the area of review evaluation required under subsection 14.9.c.1.;                                                                                                                                                                                                                                               | Same. |

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| 40 CFR 146.93(a)(2)(iii) | A description of post-injection monitoring location, methods, and proposed frequency;                                                                                                                                                                                                                                                                                                                                                                                                                            | 47-13-13.9.a.2.C. | A description of post-injection monitoring location, methods, and proposed frequency;                                                                                                                                                                                                                                                                                                                                                                                                                                         | Same. |
| 40 CFR 146.93(a)(2)(iv)  | A proposed schedule for submitting post-injection site care monitoring results to the Director pursuant to 40 CFR 146.91(e); and,                                                                                                                                                                                                                                                                                                                                                                                | 47-13-13.9.a.2.D. | A proposed schedule for submitting post-injection site care monitoring results to the Director pursuant to subsection 13.6.c.1.E.; and,                                                                                                                                                                                                                                                                                                                                                                                       | Same. |
| 40 CFR 146.93(a)(2)(v)   | The duration of the post-injection site care timeframe and, if approved by the Director, the demonstration of the alternative post-injection site care timeframe that ensures non-endangerment of USDWs.                                                                                                                                                                                                                                                                                                         | 47-13-13.9.a.2.E. | The duration of the post-injection site care timeframe and, if approved by the Director, the demonstration of the alternative post-injection site care timeframe that ensures non-endangerment of USDWs.                                                                                                                                                                                                                                                                                                                      | Same. |
| 40 CFR 146.93(a)(3)      | Upon cessation of injection, owners or operators of Class VI wells must either submit an amended post-injection site care and site closure plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the plan is needed. Any amendments to the post-injection site care and site closure plan must be approved by the Director, be incorporated into the permit, and are subject to the permit modification requirements at 40 CFR 144.39 or 144.41, as appropriate. | 47-13-13.9.a.3.   | Upon cessation of injection, owners or operators of Class 6 wells must either submit an amended post-injection site care and site closure plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the plan is needed. Any amendments to the post-injection site care and site closure plan must be approved by the Director, be incorporated into the permit, and are subject to the permit modification requirements at sections 14.18 and 14.20 of this rule, as appropriate. | Same. |
| 40 CFR 146.93(a)(4)      | At any time during the life of the geologic sequestration project, the owner or operator may modify and resubmit the post-injection site care and site closure plan for the Director's approval within 30 days of such change.                                                                                                                                                                                                                                                                                   | 47-13-13.9.a.4.   | At any time during the life of the geologic sequestration project, the owner or operator may modify and resubmit the post-injection site care and site closure plan for the Director's approval within 30 days of such change.                                                                                                                                                                                                                                                                                                | Same. |
| 40 CFR 146.93(b)         | The owner or operator shall monitor the site following the cessation of injection to show the position of the carbon dioxide plume and pressure front and demonstrate that USDWs are not being endangered.                                                                                                                                                                                                                                                                                                       | 47-13-13.9.b.     | The owner or operator shall monitor the site following the cessation of injection to show the position of the carbon dioxide plume and pressure front and demonstrate that USDWs are not being endangered.                                                                                                                                                                                                                                                                                                                    | Same. |

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| 40 CFR 146.93(b)(1) | Following the cessation of injection, the owner or operator shall continue to conduct monitoring as specified in the Director-approved post-injection site care and site closure plan for at least 50 years or for the duration of the alternative timeframe approved by the Director pursuant to requirements in paragraph (c) of this section, unless he/she makes a demonstration under (b)(2) of this section. The monitoring must continue until the geologic sequestration project no longer poses an endangerment to USDWs and the demonstration under (b)(2) of this section is submitted and approved by the Director.                                                              | 47-13-13.9.b.1. | Following the cessation of injection, the owner or operator shall continue to conduct monitoring as specified in the Director-approved post-injection site care and site closure plan for at least 50 years or for the duration of the alternative timeframe approved by the Director pursuant to requirements in subsection 13.9.c., unless he/she makes a demonstration under subsection 13.9.b.2.. The monitoring must continue until the geologic sequestration project no longer poses an endangerment to USDWs and the demonstration under subsection 13.9.b.2. is submitted and approved by the Director.                                                                             | Same. |
| 40 CFR 146.93(b)(2) | If the owner or operator can demonstrate to the satisfaction of the Director before 50 years or prior to the end of the approved alternative timeframe based on monitoring and other site-specific data, that the geologic sequestration project no longer poses an endangerment to USDWs, the Director may approve an amendment to the post-injection site care and site closure plan to reduce the frequency of monitoring or may authorize site closure before the end of the 50-year period or prior to the end of the approved alternative timeframe, where he or she has substantial evidence that the geologic sequestration project no longer poses a risk of endangerment to USDWs. | 47-13-13.9.b.2. | If the owner or operator can demonstrate to the satisfaction of the Director before 50 years or prior to the end of the approved alternative timeframe based on monitoring and other site-specific data, that the geologic sequestration project no longer poses an endangerment to USDWs, the Director may approve an amendment to the post-injection site care and site closure plan to reduce the frequency of monitoring or may authorize site closure before the end of the 50-year period or prior to the end of the approved alternative timeframe, where he or she has substantial evidence that the geologic sequestration project no longer poses a risk of endangerment to USDWs. | Same. |

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| 40 CFR 146.93(b)(3) | Prior to authorization for site closure, the owner or operator must submit to the Director for review and approval a demonstration, based on monitoring and other site-specific data, that no additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs.                                                                                                                                                                                             | 47-13-13.9.b.3. | Prior to authorization for site closure, the owner or operator must submit to the Director for review and approval a demonstration, based on monitoring and other site-specific data, that no additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs.                                                                                                                                                                                 | Same. |
| 40 CFR 146.93(b)(4) | If the demonstration in paragraph (b)(3) of this section cannot be made (i.e., additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs) at the end of the 50-year period or at the end of the approved alternative timeframe, or if the Director does not approve the demonstration, the owner or operator must submit to the Director a plan to continue post-injection site care until a demonstration can be made and approved by the Director. | 47-13-13.9.b.4. | If the demonstration in subsection 13.9.b.3. cannot be made (i.e., additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs) at the end of the 50-year period or at the end of the approved alternative timeframe, or if the Director does not approve the demonstration, the owner or operator must submit to the Director a plan to continue post-injection site care until a demonstration can be made and approved by the Director. | Same. |

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| 40 CFR 146.93(c)         | <i>Demonstration of alternative post-injection site care timeframe.</i> At the Director's discretion, the Director may approve, in consultation with EPA, an alternative post-injection site care timeframe other than the 50 year default, if an owner or operator can demonstrate during the permitting process that an alternative post-injection site care timeframe is appropriate and ensures non-endangerment of USDWs. The demonstration must be based on significant, site-specific data and information including all data and information collected pursuant to 40 CFR 146.82 and 146.83, and must contain substantial evidence that the geologic sequestration project will no longer pose a risk of endangerment to USDWs at the end of the alternative post-injection site care timeframe. | 47-13-13.9.c.     | Demonstration of alternative post-injection site care timeframe. At the Director's discretion, the Director may approve, in consultation with EPA, an alternative post-injection site care timeframe other than the 50 year default, if an owner or operator can demonstrate during the permitting process that an alternative post-injection site care timeframe is appropriate and ensures non-endangerment of USDWs. The demonstration must be based on significant, site-specific data and information including all data and information collected pursuant to section 13.8. and subsection 13.2.a., and must contain substantial evidence that the geologic sequestration project will no longer pose a risk of endangerment to USDWs at the end of the alternative post-injection site care timeframe. | Same. |
| 40 CFR 146.93(c)(1)      | A demonstration of an alternative post-injection site care timeframe must include consideration and documentation of:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 47-13-13.9.c.1.   | A demonstration of an alternative post-injection site care timeframe must include consideration and documentation of:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Same. |
| 40 CFR 146.93(c)(1)(i)   | The results of computational modeling performed pursuant to delineation of the area of review under 40 CFR 146.84;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 47-13-13.9.c.1.A. | The results of computational modeling performed pursuant to delineation of the area of review under section 5.4.;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Same. |
| 40 CFR 146.93(c)(1)(ii)  | The predicted timeframe for pressure decline within the injection zone, and any other zones, such that formation fluids may not be forced into any USDWs; and/or the timeframe for pressure decline to pre-injection pressures;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 47-13-13.9.c.1.B. | The predicted timeframe for pressure decline within the injection zone, and any other zones, such that formation fluids may not be forced into any USDWs; and/or the timeframe for pressure decline to pre-injection pressures;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Same. |
| 40 CFR 146.93(c)(1)(iii) | The predicted rate of carbon dioxide plume migration within the injection zone, and the predicted timeframe for the cessation of migration;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 47-13-13.9.c.1.C. | The predicted rate of carbon dioxide plume migration within the injection zone, and the predicted timeframe for the cessation of migration;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Same. |

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| 40 CFR 146.93(c)(1)(iv)   | A description of the site-specific processes that will result in carbon dioxide trapping including immobilization by capillary trapping, dissolution, and mineralization at the site;                                                                                                                                 | 47-13-13.9.c.1.D. | A description of the site-specific processes that will result in carbon dioxide trapping including immobilization by capillary trapping, dissolution, and mineralization at the site;                                                                                                                                 | Same. |
| 40 CFR 146.93(c)(1)(v)    | The predicted rate of carbon dioxide trapping in the immobile capillary phase, dissolved phase, and/or mineral phase;                                                                                                                                                                                                 | 47-13-13.9.c.1.E. | The predicted rate of carbon dioxide trapping in the immobile capillary phase, dissolved phase, and/or mineral phase;                                                                                                                                                                                                 | Same. |
| 40 CFR 146.93(c)(1)(vi)   | The results of laboratory analyses, research studies, and/or field or site-specific studies to verify the information required in paragraphs (iv) and (v) of this section;                                                                                                                                            | 47-13-13.9.c.1.G. | The results of laboratory analyses, research studies, and/or field or site-specific studies to verify the information required in subsections 13.9.c.1.D. and 13.9.c.1.E.;                                                                                                                                            | Same. |
| 40 CFR 146.93(c)(1)(vii)  | A characterization of the confining zone(s) including a demonstration that it is free of transmissive faults, fractures, and micro-fractures and of appropriate thickness, permeability, and integrity to impede fluid (e.g., carbon dioxide, formation fluids) movement;                                             | 47-13-13.9.c.1.H. | A characterization of the confining zone(s) including a demonstration that it is free of transmissive faults, fractures, and micro-fractures and of appropriate thickness, permeability, and integrity to impede fluid (e.g., carbon dioxide, formation fluids) movement;                                             | Same. |
| 40 CFR 146.93(c)(1)(viii) | The presence of potential conduits for fluid movement including planned injection wells and project monitoring wells associated with the proposed geologic sequestration project or any other projects in proximity to the predicted/modeled, final extent of the carbon dioxide plume and area of elevated pressure; | 47-13-13.9.c.1.I. | The presence of potential conduits for fluid movement including planned injection wells and project monitoring wells associated with the proposed geologic sequestration project or any other projects in proximity to the predicted/modeled, final extent of the carbon dioxide plume and area of elevated pressure; | Same. |
| 40 CFR 146.93(c)(1)(ix)   | A description of the well construction and an assessment of the quality of plugs of all abandoned wells within the area of review;                                                                                                                                                                                    | 47-13-13.9.c.1.J. | A description of the well construction and an assessment of the quality of plugs of all abandoned wells within the area of review;                                                                                                                                                                                    | Same. |
| 40 CFR 146.93(c)(1)(x)    | The distance between the injection zone and the nearest USDWs above and/or below the injection zone; and                                                                                                                                                                                                              | 47-13-13.9.c.1.K. | The distance between the injection zone and the nearest USDWs above and/or below the injection zone; and                                                                                                                                                                                                              | Same. |
| 40 CFR 146.93(c)(1)(xi)   | Any additional site-specific factors required by the Director.                                                                                                                                                                                                                                                        | 47-13-13.9.c.1.L. | Any additional site-specific factors required by the Director.                                                                                                                                                                                                                                                        | Same. |

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| 40 CFR 146.93(c)(2)      | Information submitted to support the demonstration in paragraph (c)(1) of this section must meet the following criteria:                                                                                                                                                                                                                  | 47-13-13.9.c.2.   | Information submitted to support the demonstration in subsection 13.9.c.1. must meet the following criteria:                                                                                                                                                                                                                              | Same. |
| 40 CFR 146.93(c)(2)(i)   | All analyses and tests performed to support the demonstration must be accurate, reproducible, and performed in accordance with the established quality assurance standards;                                                                                                                                                               | 47-13-13.9.c.2.A. | All analyses and tests performed to support the demonstration must be accurate, reproducible, and performed in accordance with the established quality assurance standards;                                                                                                                                                               | Same. |
| 40 CFR 146.93(c)(2)(ii)  | Estimation techniques must be appropriate and EPA-certified test protocols must be used where available;                                                                                                                                                                                                                                  | 47-13-13.9.c.2.B. | Estimation techniques must be appropriate and EPA-certified test protocols must be used where available;                                                                                                                                                                                                                                  | Same. |
| 40 CFR 146.93(c)(2)(iii) | Predictive models must be appropriate and tailored to the site conditions, composition of the carbon dioxide stream and injection and site conditions over the life of the geologic sequestration project;                                                                                                                                | 47-13-13.9.c.2.C. | Predictive models must be appropriate and tailored to the site conditions, composition of the carbon dioxide stream and injection and site conditions over the life of the geologic sequestration project;                                                                                                                                | Same. |
| 40 CFR 146.93(c)(2)(iv)  | Predictive models must be calibrated using existing information (e.g., at Class I, Class II, or Class V experimental technology well sites) where sufficient data are available;                                                                                                                                                          | 47-13-13.9.c.2.D. | Predictive models must be calibrated using existing information (e.g., at Class 1, Class 2, or Class 5 experimental technology well sites) where sufficient data are available;                                                                                                                                                           | Same. |
| 40 CFR 146.93(c)(2)(v)   | Reasonably conservative values and modeling assumptions must be used and disclosed to the Director whenever values are estimated on the basis of known, historical information instead of site-specific measurements;                                                                                                                     | 47-13-13.9.c.2.E. | Reasonably conservative values and modeling assumptions must be used and disclosed to the Director whenever values are estimated on the basis of known, historical information instead of site-specific measurements;                                                                                                                     | Same. |
| 40 CFR 146.93(c)(2)(vi)  | An analysis must be performed to identify and assess aspects of the alternative post-injection site care timeframe demonstration that contribute significantly to uncertainty. The owner or operator must conduct sensitivity analyses to determine the effect that significant uncertainty may contribute to the modeling demonstration. | 47-13-13.9.c.2.F. | An analysis must be performed to identify and assess aspects of the alternative post-injection site care timeframe demonstration that contribute significantly to uncertainty. The owner or operator must conduct sensitivity analyses to determine the effect that significant uncertainty may contribute to the modeling demonstration. | Same. |
| 40 CFR 146.93(c)(2)(vii) | An approved quality assurance and quality control plan must address all aspects of the demonstration; and,                                                                                                                                                                                                                                | 47-13-13.9.c.2.G. | An approved quality assurance and quality control plan must address all aspects of the demonstration; and,                                                                                                                                                                                                                                | Same. |

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| 40 CFR 146.93(c)(2)(viii) | Any additional criteria required by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 47-13-13.9.c.2.H. | Any additional criteria required by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Same. |
| 40 CFR 146.93(d)          | <i>Notice of intent for site closure.</i> The owner or operator must notify the Director in writing at least 120 days before site closure. At this time, if any changes have been made to the original post-injection site care and site closure plan, the owner or operator must also provide the revised plan. The Director may allow for a shorter notice period.                                                                                                                                                      | 47-13-13.9.d.     | Notice of intent for site closure. The owner or operator must notify the Director in writing at least 120 days before site closure. At this time, if any changes have been made to the original post-injection site care and site closure plan, the owner or operator must also provide the revised plan. The Director may allow for a shorter notice period.                                                                                                                                                 | Same. |
| 40 CFR 146.93(e)          | After the Director has authorized site closure, the owner or operator must plug all monitoring wells in a manner which will not allow movement of injection or formation fluids that endangers a USDW.                                                                                                                                                                                                                                                                                                                    | 47-13-13.9.e.     | After the Director has authorized site closure, the owner or operator must plug all monitoring wells in a manner which will not allow movement of injection or formation fluids that endangers a USDW.                                                                                                                                                                                                                                                                                                        | Same. |
| 40 CFR 146.93(f)          | The owner or operator must submit a site closure report to the Director within 90 days of site closure, which must thereafter be retained at a location designated by the Director for 10 years. The report must include:                                                                                                                                                                                                                                                                                                 | 47-13-13.9.f.     | The owner or operator must submit a site closure report to the Director within 90 days of site closure, which must thereafter be retained at a location designated by the Director for 10 years. The report must include:                                                                                                                                                                                                                                                                                     | Same. |
| 40 CFR 146.93(f)(1)       | Documentation of appropriate injection and monitoring well plugging as specified in 40 CFR 146.92 and paragraph (e) of this section. The owner or operator must provide a copy of a survey plat which has been submitted to the local zoning authority designated by the Director. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks. The owner or operator must also submit a copy of the plat to the Regional Administrator of the appropriate EPA Regional Office; | 47-13-13.9.f.1.   | Documentation of appropriate injection and monitoring well plugging as specified in section 13.4. and subsection 13.9.e. The owner or operator must provide a copy of a survey plat which has been submitted to the local zoning authority designated by the Director. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks. The owner or operator must also submit a copy of the plat to the Regional Administrator of the appropriate EPA Regional Office; | Same. |

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| 40 CFR 146.93(f)(2) | Documentation of appropriate notification and information to such State, local and Tribal authorities that have authority over drilling activities to enable such State, local, and Tribal authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zone(s); and | 47-13-13.9.f.2. | Documentation of appropriate notification and information to such State, local and Tribal authorities that have authority over drilling activities to enable such State, local, and Tribal authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zone(s); and | Same. |
| 40 CFR 146.93(f)(3) | Records reflecting the nature, composition, and volume of the carbon dioxide stream.                                                                                                                                                                                                                                                  | 47-13-13.9.f.3. | Records reflecting the nature, composition, and volume of the carbon dioxide stream.                                                                                                                                                                                                                                                  | Same. |
| 40 CFR 146.93(g)    | Each owner or operator of a Class VI injection well must record a notation on the deed to the facility property or any other document that is normally examined during title search that will in perpetuity provide any potential purchaser of the property the following information:                                                | 47-13-13.9.g.   | Each owner or operator of a Class 6 injection well must record a notation on the deed to the facility property or any other document that is normally examined during title search that will in perpetuity provide any potential purchaser of the property the following information:                                                 | Same. |
| 40 CFR 146.93(g)(1) | The fact that land has been used to sequester carbon dioxide;                                                                                                                                                                                                                                                                         | 47-13-13.9.g.1. | The fact that land has been used to sequester carbon dioxide;                                                                                                                                                                                                                                                                         | Same. |
| 40 CFR 146.93(g)(2) | The name of the State agency, local authority, and/or Tribe with which the survey plat was filed, as well as the address of the Environmental Protection Agency Regional Office to which it was submitted; and                                                                                                                        | 47-13-13.9.g.2. | The name of the State agency, local authority, and/or Tribe with which the survey plat was filed, as well as the address of the Environmental Protection Agency Regional Office to which it was submitted; and                                                                                                                        | Same. |
| 40 CFR 146.93(g)(3) | The volume of fluid injected, the injection zone or zones into which it was injected, and the period over which injection occurred.                                                                                                                                                                                                   | 47-13-13.9.g.3. | The volume of fluid injected, the injection zone or zones into which it was injected, and the period over which injection occurred.                                                                                                                                                                                                   | Same. |

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| 40 CFR 146.93(h)    | The owner or operator must retain for 10 years following site closure, records collected during the post-injection site care period. The owner or operator must deliver the records to the Director at the conclusion of the retention period, and the records must thereafter be retained at a location designated by the Director for that purpose.                                                                                                                                                                                                                              | 47-13-13.9.h.                    | The owner or operator must retain for 10 years following site closure, records collected during the post-injection site care period. The owner or operator must deliver the records to the Director at the conclusion of the retention period, and the records must thereafter be retained at a location designated by the Director for that purpose.                                                                                                                                                                                                         | Same. |
| 40 CFR 146.94(a)    | <b>40 CFR 146.94 Emergency and remedial response.</b><br><br>As part of the permit application, the owner or operator must provide the Director with an emergency and remedial response plan that describes actions the owner or operator must take to address movement of the injection or formation fluids that may cause an endangerment to a USDW during construction, operation, and post-injection site care periods. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. | 47-13-13.7.<br><br>47-13-13.7.a. | Emergency and Remedial Response.<br><br>As part of the permit application, the owner or operator must provide the Director with an emergency and remedial response plan that describes actions the owner or operator must take to address movement of the injection or formation fluids that may cause an endangerment to a USDW during construction, operation, and post-injection site care periods. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. | Same. |
| 40 CFR 146.94(b)    | If the owner or operator obtains evidence that the injected carbon dioxide stream and associated pressure front may cause an endangerment to a USDW, the owner or operator must:                                                                                                                                                                                                                                                                                                                                                                                                   | 47-13-13.7.b.                    | If the owner or operator obtains evidence that the injected carbon dioxide stream and associated pressure front may cause an endangerment to a USDW, the owner or operator must:                                                                                                                                                                                                                                                                                                                                                                              | Same. |
| 40 CFR 146.94(b)(1) | Immediately cease injection;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 47-13-13.7.b.1.                  | Immediately cease injection;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Same. |
| 40 CFR 146.94(b)(2) | Take all steps reasonably necessary to identify and characterize any release;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 47-13-13.7.b.2.                  | Take all steps reasonably necessary to identify and characterize any release;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Same. |

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| 40 CFR<br>146.94(b)(<br>3) | Notify the Director within 24 hours; and                                        | 47-13-13.7.b.3. | Notify the Director within 24 hours; and                                        | Same. |
| 40 CFR<br>146.94(b)(<br>4) | Implement the emergency and remedial<br>response plan approved by the Director. | 47-13-13.7.b.4. | Implement the emergency and remedial<br>response plan approved by the Director. | Same. |

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| 40 CFR<br>146.94(c) | The Director may allow the operator to resume injection prior to remediation if the owner or operator demonstrates that the injection operation will not endanger USDWs. | 47-13-13.7.c. | <p>The [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.94">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=8e845d3a1c20c5c794a0df5b8969c1ca&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.94" ] may allow the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0df3b20100d24c91ef2d3bc3f665d130&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.94">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=0df3b20100d24c91ef2d3bc3f665d130&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.94" ] to resume injection prior to remediation if the [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.94">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=6542131c028f2509274a321338894e93&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.94" ] demonstrates that the injection [ <a href="https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=a587af1ebf906185a43ec2313226cfb&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.94">HYPERLINK</a> "https://www.law.cornell.edu/definitions/index.php?width=840&amp;height=800&amp;iframe=true&amp;def_id=a587af1ebf906185a43ec2313226cfb&amp;term_occur=999&amp;term_src=Title:40:Chapter:I:Subchapter:D:Part:146:Subpart:H:146.94" ]</p> | Same. |
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|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 | hapter:I:Subchapter:D:Part:146:Sub<br>part:H:146.94" ] will not endanger<br>USDWs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |
| 40 CFR<br>146.94(d)        | The owner or operator shall periodically review the emergency and remedial response plan developed under paragraph (a) of this section. In no case shall the owner or operator review the emergency and remedial response plan less often than once every five years. Based on this review, the owner or operator shall submit an amended emergency and remedial response plan or demonstrate to the Director that no amendment to the emergency and remedial response plan is needed. Any amendments to the emergency and remedial response plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at 40 CFR 144.39 or 144.41, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows: | 47-13-13.7.d.   | The owner or operator shall periodically review the emergency and remedial response plan developed under paragraph (a) of this section. In no case shall the owner or operator review the emergency and remedial response plan less often than once every five years. Based on this review, the owner or operator shall submit an amended emergency and remedial response plan or demonstrate to the Director that no amendment to the emergency and remedial response plan is needed. Any amendments to the emergency and remedial response plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements sections 14.8 and 14.20 of this rule, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows: | Same. |
| 40 CFR<br>146.94(d)(<br>1) | Within one year of an area of review reevaluation;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 47-13-13.7.d.1. | Within one year of an area of review reevaluation;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Same. |
| 40 CFR<br>146.94(d)(<br>2) | Following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the Director; or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 47-13-13.7.d.2. | Following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the Director; or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Same. |
| 40 CFR<br>146.94(d)(<br>3) | When required by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 47-13-13.7.d.3. | When required by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Same. |

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| 40 CFR<br>146.95 | <b>40 CFR 146.95 Class VI injection depth waiver requirements.</b><br><br>This section sets forth information which an owner or operator seeking a waiver of the Class VI injection depth requirements must submit to the Director; information the Director must consider in consultation with all affected Public Water System Supervision Directors; the procedure for Director – Regional Administrator communication and waiver issuance; and the additional requirements that apply to owners or operators of Class VI wells granted a waiver of the injection depth requirements. | 47-13-14.8.   | Waiver of Requirements by the Director.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The text at 14.8.a. and 14.8.c. seems to imply that projects operating under injection depth waivers are subject to less stringent requirements, which is inconsistent with how EPA characterized these in writing the rule.<br><br>However, the requirements for applying for, approving and operating under an injection death waiver are identical to the CFR.<br><br>The provision at 47-13-14.8.b is unique, and the implications for not meeting requirements similar to the CFR is unclear. |
|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 47-13-14.8.a. | When injection does not occur into, through, or above an underground source of drinking water, the Director may authorize a well or project with less stringent requirements for area of review, construction, mechanical integrity, operation, monitoring, and reporting than required in section 8, 9, 10, and subsection 14.7 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 47-13-14.8.b. | When injection occurs through or above an underground source of drinking water, but the radius of endangering influence when computed under subdivision 5.3.a is smaller or equal to the radius of the well, the Director may authorize a well or project with less stringent requirements for operation, monitoring, and reporting in sections 8, 10, and subsection 14.7 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 47-13-14.8.c. | When reducing requirements under subdivision 14.8.a or 14.8.b of this section, the Director shall explain the reason for the action by preparing a fact sheet under subsection 14.31.                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 47-13-14.8.d. | When an owner or operator submits a waiver of the Class 6 injection depth requirements, the Director must consult                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

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|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   | with all affected Public Water System Directors and the Regional Administrator after considering the following:                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| 40 CFR 146.95(a)    | In seeking a waiver of the requirement to inject below the lowermost USDW, the owner or operator must submit a supplemental report concurrent with permit application. The supplemental report must include the following,                                                                                                                                                                                                                                                                                                      | 47-13-14.8.d.1.   | Owner/Operator Requirements. In seeking a waiver of the requirement to inject below the lowermost USDW, the owner or operator must submit a supplemental report concurrent with permit application. The supplemental report must include the following,                                                                                                                                                                                                                                                                         | Same. |
| 40 CFR 146.95(a)(1) | A demonstration that the injection zone(s) is/are laterally continuous, is not a USDW, and is not hydraulically connected to USDWs; does not outcrop; has adequate injectivity, volume, and sufficient porosity to safely contain the injected carbon dioxide and formation fluids; and has appropriate geochemistry.                                                                                                                                                                                                           | 47-13-14.8.d.1.A. | A demonstration that the injection zone(s) is/are laterally continuous, is not a USDW, and is not hydraulically connected to USDWs; does not outcrop; has adequate injectivity, volume, and sufficient porosity to safely contain the injected carbon dioxide and formation fluids; and has appropriate geochemistry.                                                                                                                                                                                                           | Same. |
| 40 CFR 146.95(a)(2) | A demonstration that the injection zone(s) is/are bounded by laterally continuous, impermeable confining units above and below the injection zone(s) adequate to prevent fluid movement and pressure buildup outside of the injection zone(s); and that the confining unit(s) is/are free of transmissive faults and fractures. The report shall further characterize the regional fracture properties and contain a demonstration that such fractures will not interfere with injection, serve as conduits, or endanger USDWs. | 47-13-14.8.d.1.B. | A demonstration that the injection zone(s) is/are bounded by laterally continuous, impermeable confining units above and below the injection zone(s) adequate to prevent fluid movement and pressure buildup outside of the injection zone(s); and that the confining unit(s) is/are free of transmissive faults and fractures. The report shall further characterize the regional fracture properties and contain a demonstration that such fractures will not interfere with injection, serve as conduits, or endanger USDWs. | Same. |

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| 40 CFR 146.95(a)(3) | A demonstration, using computational modeling, that USDWs above and below the injection zone will not be endangered as a result of fluid movement. This modeling should be conducted in conjunction with the area of review determination, as described in 40 CFR 146.84, and is subject to requirements, as described in 40 CFR 146.84(c), and periodic reevaluation, as described in 40 CFR 146.84(e). | 47-13-14.8.d.1.C. | A demonstration, using computational modeling, that USDWs above and below the injection zone will not be endangered as a result of fluid movement. This modeling should be conducted in conjunction with the area of review determination, as described in 5.4 and 14.9, and is subject to requirements, as described in 14.9.c., and periodic reevaluation, as described in 14.9.e. | Same.    |
| 40 CFR 146.95(a)(4) | A demonstration that well design and construction, in conjunction with the waiver, will ensure isolation of the injectate in lieu of requirements at 146.86(a)(1) and will meet well construction requirements in paragraph (f) of this section.                                                                                                                                                         | 47-13-14.8.d.1.D. | A demonstration that well design and construction, in conjunction with the waiver, will ensure isolation of the injectate in lieu of requirements at 13.3.a.1. and will meet well construction requirements in 14.8.d.6. of this section.                                                                                                                                            | Same.    |
| 40 CFR 146.95(a)(5) | A description of how the monitoring and testing and any additional plans will be tailored to the geologic sequestration project to ensure protection of USDWs above and below the injection zone(s), if a waiver is granted.                                                                                                                                                                             | 47-13-14.8.d.1.E. | A description of how the monitoring and testing and any additional plans will be tailored to the geologic sequestration project to ensure protection of USDWs above and below the injection zone(s), if a waiver is granted.                                                                                                                                                         | Same.    |
| 40 CFR 146.95(a)(6) | Information on the location of all the public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review.                                                                                                                                                                                                                                                       | 47-13-14.8.d.1.F. | Information on the location of all the public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review.                                                                                                                                                                                                                                   | Same.    |
| 40 CFR 146.95(a)(7) | Any other information requested by the Director to inform the Regional Administrator's decision to issue a waiver.                                                                                                                                                                                                                                                                                       | 47-13-14.8.d.1.G. | Any other information requested by the Director to inform the Regional Administrator's decision to issue a waiver.                                                                                                                                                                                                                                                                   | Same.    |
| 40 CFR 146.95(b)    | To inform the Regional Administrator's decision on whether to grant a waiver of the injection depth requirements at 40 CFR 144.6, 146.5(f), and 146.86(a)(1), the Director must submit, to the Regional Administrator, documentation of the following:                                                                                                                                                   | 47-13-14.8.d.2.   | Consultation. The Director must inform the Regional Administrator of a pending decision on whether to grant a waiver of the injection depth requirements at section 4.6, 14.8.d.6., and 13.3.a.1., the Director must submit, to the Regional Administrator, documentation of the following:                                                                                          | Similar. |

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| 40 CFR 146.95(b)(1)      | An evaluation of the following information as it relates to siting, construction, and operation of a geologic sequestration project with a waiver:                                                                                                                                                                                        | 47-13-14.8.d.2.A.     | An evaluation of the following information as it relates to siting, construction, and operation of a geologic sequestration project with a waiver:                                                                                                                                                                                        | Same. |
| 40 CFR 146.95(b)(1)(i)   | The integrity of the upper and lower confining units;                                                                                                                                                                                                                                                                                     | 47-13-14.8.d.2.A.i.   | The integrity of the upper and lower confining units;                                                                                                                                                                                                                                                                                     | Same. |
| 40 CFR 146.95(b)(1)(ii)  | The suitability of the injection zone(s) (e.g., lateral continuity; lack of transmissive faults and fractures; knowledge of current or planned artificial penetrations into the injection zone(s) or formations below the injection zone);                                                                                                | 47-13-14.8.d.2.A.ii.  | The suitability of the injection zone(s) (e.g., lateral continuity; lack of transmissive faults and fractures; knowledge of current or planned artificial penetrations into the injection zone(s) or formations below the injection zone);                                                                                                | Same. |
| 40 CFR 146.95(b)(1)(iii) | The potential capacity of the geologic formation(s) to sequester carbon dioxide, accounting for the availability of alternative injection sites;                                                                                                                                                                                          | 47-13-14.8.d.2.A.iii. | The potential capacity of the geologic formation(s) to sequester carbon dioxide, accounting for the availability of alternative injection sites;                                                                                                                                                                                          | Same. |
| 40 CFR 146.95(b)(1)(iv)  | All other site characterization data, the proposed emergency and remedial response plan, and a demonstration of financial responsibility;                                                                                                                                                                                                 | 47-13-14.8.d.2.A.iv.  | All other site characterization data, the proposed emergency and remedial response plan, and a demonstration of financial responsibility;                                                                                                                                                                                                 | Same. |
| 40 CFR 146.95(b)(1)(v)   | Community needs, demands, and supply from drinking water resources;                                                                                                                                                                                                                                                                       | 47-13-14.8.d.2.A.v.   | Community needs, demands, and supply from drinking water resources;                                                                                                                                                                                                                                                                       | Same. |
| 40 CFR 146.95(b)(1)(vi)  | Planned needs, potential and/or future use of USDWs and non-USDWs in the area;                                                                                                                                                                                                                                                            | 47-13-14.8.d.2.A.vi.  | Planned needs, potential and/or future use of USDWs and non-USDWs in the area;                                                                                                                                                                                                                                                            | Same. |
| 40 CFR 146.95(b)(1)(vii) | Planned or permitted water, hydrocarbon, or mineral resource exploitation potential of the proposed injection formation(s) and other formations both above and below the injection zone to determine if there are any plans to drill through the formation to access resources in or beneath the proposed injection zone(s)/formation(s); | 47-13-14.8.d.2.A.vii. | Planned or permitted water, hydrocarbon, or mineral resource exploitation potential of the proposed injection formation(s) and other formations both above and below the injection zone to determine if there are any plans to drill through the formation to access resources in or beneath the proposed injection zone(s)/formation(s); | Same. |

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| 40 CFR 146.95(b)(1)(viii) | The proposed plan for securing alternative resources or treating USDW formation waters in the event of contamination related to the Class VI injection activity; and,                                                                             | 47-13-14.8.d.2.A.viii. | The proposed plan for securing alternative resources or treating USDW formation waters in the event of contamination related to the Class 6 injection activity; and,                                                            | Same.    |
| 40 CFR 146.95(b)(1)(ix)   | Any other applicable considerations or information requested by the Director.                                                                                                                                                                     | 47-13-14.8.d.2.A.ix.   | Any other applicable considerations or information requested by the Director.                                                                                                                                                   | Same.    |
| 40 CFR 146.95(b)(2)       | Consultation with the Public Water System Supervision Directors of all States and Tribes having jurisdiction over lands within the area of review of a well for which a waiver is sought.                                                         | 47-13-14.8.d.2.B.      | Consultation with the Public Water System Supervision Directors of all States and Tribes having jurisdiction over lands within the area of review of a well for which a waiver is sought.                                       | Same.    |
| 40 CFR 146.95(b)(3)       | Any written waiver-related information submitted by the Public Water System Supervision Director(s) to the (UIC) Director.                                                                                                                        | 47-13-14.8.d.2.B.i.    | Any written waiver-related information submitted by the Public Water System Supervision Director(s) to the (UIC) Director.<br>14.8.d.3. Procedures.                                                                             | Similar. |
| 40 CFR 146.95(c)          | Pursuant to requirements at 40 CFR 124.10 of this chapter and concurrent with the Class VI permit application notice process, the Director shall give public notice that a waiver application has been submitted. The notice shall clearly state: | 47-13-14.8.d.3.A.      | Pursuant to requirements at 47 CSR 10-12 and concurrent with the Class 6 permit application notice process, the Director shall give public notice that a waiver application has been submitted. The notice shall clearly state: | Same.    |
| 40 CFR 146.95(c)(1)       | The depth of the proposed injection zone(s);                                                                                                                                                                                                      | 47-13-14.8.d.3.A.i.    | The depth of the proposed injection zone(s);                                                                                                                                                                                    | Same.    |
| 40 CFR 146.95(c)(2)       | The location of the injection well(s);                                                                                                                                                                                                            | 47-13-14.8.d.3.A.ii.   | The location of the injection well(s);                                                                                                                                                                                          | Same.    |
| 40 CFR 146.95(c)(3)       | The name and depth of all USDWs within the area of review;                                                                                                                                                                                        | 47-13-14.8.d.3.A.iii.  | The name and depth of all USDWs within the area of review;                                                                                                                                                                      | Same.    |
| 40 CFR 146.95(c)(4)       | A map of the area of review;                                                                                                                                                                                                                      | 47-13-14.8.d.3.A.iv.   | A map of the area of review;                                                                                                                                                                                                    | Same.    |

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| 40 CFR 146.95(c)(5) | The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and,                                                                                                                                                                | 47-13-14.8.d.3.A.v.  | The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and,                                                                                                                                                                | Same.                                                                                                                                                                                                                    |
| 40 CFR 146.95(c)(6) | The results of UIC-Public Water System Supervision consultation required under paragraph (b)(2) of this section.                                                                                                                                                                                 | 47-13-14.8.d.3.A.vi. | The results of UIC-Public Water System Supervision consultation required under 14.8.d.2.B.                                                                                                                                                                                                       | Same.                                                                                                                                                                                                                    |
| 40 CFR 146.95(d)    | Following public notice, the Director shall provide all information received through the waiver application process to the Regional Administrator. Based on the information provided, the Regional Administrator shall provide written concurrence or non-concurrence regarding waiver issuance. | 47-13-14.8.d.3.B.    | Following public notice, the Director shall provide all information received through the waiver application process to the Regional Administrator. Based on the information provided, the Regional Administrator shall provide written concurrence or non-concurrence regarding waiver issuance. | Same.                                                                                                                                                                                                                    |
| 40 CFR 146.95(d)(1) | If the Regional Administrator determines that additional information is required to support a decision, the Director shall provide the information. At his or her discretion, the Regional Administrator may require that public notice of the new information be initiated.                     | 47-13-14.8.d.3.B.i.  | If the Regional Administrator determines that additional information is required to support a decision, the Director shall provide the information. At his or her discretion, the Regional Administrator may require that public notice of the new information be initiated.                     | Same.                                                                                                                                                                                                                    |
| 40 CFR 146.95(d)(2) | In no case shall a Director of a State-approved program issue a waiver without receipt of written concurrence from the Regional Administrator.                                                                                                                                                   | 47-13-14.8.d.3.C.    | In no case shall a Director of a State-approved program issue a waiver without receipt of written concurrence from the Regional Administrator.                                                                                                                                                   | Same.                                                                                                                                                                                                                    |
| 40 CFR 146.95(e)    | If a waiver is issued, within 30 days of waiver issuance, EPA shall post the following information on the Office of Water's Web site:                                                                                                                                                            | 47-13-14.8.d.3.D.    | If a waiver is issued, within 30 days of waiver issuance, the Director shall post the following information on the Department's Division of Water and Waste Management's web site:                                                                                                               | West Virginia requires posting of information about the waiver on the department's website. Assuming that EPA, when approving a waiver, would also post information on OW's website, there is no concern for stringency. |
| 40 CFR 146.95(e)(1) | The depth of the proposed injection zone(s);                                                                                                                                                                                                                                                     | 47-13-14.8.d.3.D.i.  | The depth of the proposed injection zone(s);                                                                                                                                                                                                                                                     | Same.                                                                                                                                                                                                                    |
| 40 CFR 146.95(e)(2) | The location of the injection well(s);                                                                                                                                                                                                                                                           | 47-13-14.8.d.3.D.ii. | The location of the injection well(s);                                                                                                                                                                                                                                                           | Same.                                                                                                                                                                                                                    |

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| 40 CFR 146.95(e)(3)     | The name and depth of all USDWs within the area of review;                                                                                                                                                                   | 47-13-14.8.d.3.D.iii. | The name and depth of all USDWs within the area of review;                                                                                                                                                                  | Same. |
| 40 CFR 146.95(e)(4)     | A map of the area of review;                                                                                                                                                                                                 | 47-13-14.8.d.3.D.iv.  | A map of the area of review;                                                                                                                                                                                                | Same. |
| 40 CFR 146.95(e)(5)     | The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and                                                                                             | 47-13-14.8.d.3.D.v.   | The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and                                                                                            | Same. |
| 40 CFR 146.95(e)(6)     | The date of waiver issuance.                                                                                                                                                                                                 | 47-13-14.8.d.3.D.vi.  | The date of waiver issuance.                                                                                                                                                                                                | Same. |
| 40 CFR 146.95(f)        | Upon receipt of a waiver of the requirement to inject below the lowermost USDW for geologic sequestration, the owner or operator of the Class VI well must comply with:                                                      | 47-13-14.8.d.4.       | Additional requirements. Upon receipt of a waiver of the requirement to inject below the lowermost USDW for geologic sequestration, the owner or operator of the Class 6 well must comply with:                             | Same. |
| 40 CFR 146.95(f)(1)     | All requirements at 40 CFR 146.84, 146.85, 146.87, 146.88, 146.89, 146.91, 146.92, and 146.94;                                                                                                                               | 47-13-14.8.d.4.A.     | All requirements at 14.9.b.5., 14.7.g., 13.5, 13.6., 6.2., 13.6.c.1., 13.4., and 13.7. of this rule;                                                                                                                        | Same. |
| 40 CFR 146.95(f)(2)     | All requirements at 40 CFR 146.86 with the following modified requirements:                                                                                                                                                  | 47-13-14.8.d.4.B.     | All requirements at section 13.3 with the following modified requirements:                                                                                                                                                  | Same. |
| 40 CFR 146.95(f)(2)(i)  | The owner or operator must ensure that Class VI wells with a waiver are constructed and completed to prevent movement of fluids into any unauthorized zones including USDWs, in lieu of requirements at 40 CFR 146.86(a)(1). | 47-13-14.8.d.4.B.i.   | The owner or operator must ensure that Class 6 wells with a waiver are constructed and completed to prevent movement of fluids into any unauthorized zones including USDWs, in lieu of requirements at subsection 13.3.a.1. | Same. |
| 40 CFR 146.95(f)(2)(ii) | The casing and cementing program must be designed to prevent the movement of fluids into any unauthorized zones including USDWs in lieu of requirements at 40 CFR 146.86(b)(1).                                              | 47-13-14.8.d.4.B.ii.  | The casing and cementing program must be designed to prevent the movement of fluids into any unauthorized zones including USDWs in lieu of requirements 13.3.b.1.A.                                                         | Same. |

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| 40 CFR 146.95(f)(2)(iii) | The surface casing must extend through the base of the nearest USDW directly above the injection zone and be cemented to the surface; or, at the Director's discretion, another formation above the injection zone and below the nearest USDW above the injection zone.                                                                                                                                                                                                             | 47-13-14.8.d.4.B.iii. | The surface casing must extend through the base of the nearest USDW directly above the injection zone and be cemented to the surface; or, at the Director's discretion, another formation above the injection zone and below the nearest USDW above the injection zone.                                                                                                                                                                                                             | Same. |
| 40 CFR 146.95(f)(3)      | All requirements at 40 CFR 146.90 with the following modified requirements:                                                                                                                                                                                                                                                                                                                                                                                                         | 47-13-14.8.d.4.C.     | All requirements at 13.6.b. with the following modified requirements:                                                                                                                                                                                                                                                                                                                                                                                                               | Same. |
| 40 CFR 146.95(f)(3)(i)   | The owner or operator shall monitor the groundwater quality, geochemical changes, and pressure in the first USDWs immediately above and below the injection zone(s); and in any other formations at the discretion of the Director.                                                                                                                                                                                                                                                 | 47-13-14.8.d.4.C.i.   | The owner or operator shall monitor the groundwater quality, geochemical changes, and pressure in the first USDWs immediately above and below the injection zone(s); and in any other formations at the discretion of the Director.                                                                                                                                                                                                                                                 | Same. |
| 40 CFR 146.95(f)(3)(ii)  | Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct methods to monitor for pressure changes in the injection zone(s); and, indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate. | 47-13-14.8.d.4.C.ii.  | Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct methods to monitor for pressure changes in the injection zone(s); and, indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate. | Same. |
| 40 CFR 146.95(f)(4)      | All requirements at 40 CFR 146.93 with the following, modified post-injection site care monitoring requirements:                                                                                                                                                                                                                                                                                                                                                                    | 47-13-14.8.d.4.D.     | All requirements at 13.9. with the following, modified post-injection site care monitoring requirements:                                                                                                                                                                                                                                                                                                                                                                            | Same. |
| 40 CFR 146.95(f)(4)(i)   | The owner or operator shall monitor the groundwater quality, geochemical changes and pressure in the first USDWs immediately above and below the injection zone; and in any other formations at the discretion of the Director.                                                                                                                                                                                                                                                     | 47-13-14.8.d.4.D.i.   | The owner or operator shall monitor the groundwater quality, geochemical changes and pressure in the first USDWs immediately above and below the injection zone; and in any other formations at the discretion of the Director.                                                                                                                                                                                                                                                     | Same. |

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| 40 CFR 146.95(f)(4)(ii) | Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct methods in the injection zone(s); and indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines based on site-specific geology, that such methods are not appropriate; | 47-13-14.8.d.4.D.ii. | Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct methods in the injection zone(s); and indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines based on site-specific geology, that such methods are not appropriate; | Same. |
| 40 CFR 146.95(f)(5)     | Any additional requirements requested by the Director designed to ensure protection of USDWs above and below the injection zone(s).                                                                                                                                                                                                                                                                                                               | 47-13-14.8.d.4.E.    | Any additional requirements requested by the Director designed to ensure protection of USDWs above and below the injection zone(s).                                                                                                                                                                                                                                                                                                               | Same. |

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